11-5895-1185-13

TM 11-5895-1185-13

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL AND DIRECT SUPPORT MAINTENANCE

FOR

COMMUNICATION CENTRAL
AN/TSC-60(V)7
(NSN 5895-01-129-1827)
PART NO. 649-7174-001

HEADQUARTERS, DEPARTMENT OF THE ARMY

2 JULY 1984

READEX FICHE best copy available

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D 101.11:

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1 DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2 IF POSSIBLE , TURN OFF THE ELECTRICAL POWER

3 IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL

4 SEND FOR HELP AS SOON AS POSSIBLE

5 AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

WARNING

HIGH VOLTAGE

is used in the operation of this equipment

DEATH ON CONTACT

may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections or 115 volt ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through the body.

Warning: Do not be misled by the term "low voltage". Potentials as low as 50 volts may cause death under adverse conditions.

For Artifical Respiration, refer to FM 21-11.

SAFETY PRECAUTION

A periodic review of safety precautions in TB 385-4, Safety Precautions for Maintenance of Electrical/Electronic Equipment, is recommended. When the equipment is operated with covers removed, DO NOT TOUCH exposed connections or components. MAKE CERTAIN you are not grounded when making connections or adjusting components inside the test instrument.

DO NOT SERVICE OR ADJUST ALONE

Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

Technical Manual

No. 11-5895-1185-13

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 2 July 1984

OPERATOR'S, ORGANIZATIONAL AND DIRECT SUPPORT MAINTENANCE
FOR
COMMUNICATION CENTRAL
AN/TSC-60 (V)7
(NSN 5895-01-129-1827)
PART NO. 649-7174-001

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. In either case, a reply will be furnished direct to you.

NOTE

An alphabetical index and cross-reference index are at the back of this manual. The introduction (proceding Chapter 1) explains the material covered in each section.

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INTRODUCTION

SCOPE.

This manual is a Combined Operation and Maintenance manual for Communications Central AN/TSC-60(V)7. The manual consists of five chapters. Chapter 1 describes the AN/TSC-60(V)7 and its individual equipment units. Chapter 2 contains instructions for installation of the system. Chapter 3 contains operating instructions for the equipment units in the system. Chapter 4 discusses theory of operation of the AN/TSC-60(V)7 from a signal-flow concept. Chapter 5 contains instructions for organizational maintenance of the system. Chapter 6 is an illustrated parts breakdown of the system. Chapter 7 contains to-from wire lists and wiring diagrams of the cables that interconnect system equipment units.

SPECIFICATIONS.

Publications governing the format, content, use of abbreviations, symbols, and reference designations used in this manual are as follows:

MIL-M-38784A (with Amendment 5)	Manuals, Technical: General Style and Format Requirements
MIL-M-38798B	Manuals, Technical: Operation Instructions, Maintenance Instructions, Circuit Diagrams, Alignment Procedures, and Installation Planning
MIL-M-38807	Manuals, Technical: Illustrated Parts Breakdown, Preparation of
MIL-STD-12C	Military Standard Abbreviations for Use on Drawings, Specifications, Standards and in Technical Documents
ANSI Y32.2-1975	Graphic Symbols for Electrical and Electronics Diagrams
ANSI Y32.16-1975	Reference Designations for Electrical and Electronics Parts and Equipments
ANSI Y14.15b-1973	American National Standard Drafting Practices for Interconnection Diagrams
ANSI Y32.14	Graphic Symbols for Logic Diagrams

CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS. Refer to the latest issue of DA PAM 310-1 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

MAINTENANCE FORMS, RECORDS, AND REPORTS. File maintenance forms, records, and reports as follows:

a. Maintenance and Unsatisfactory Equipment Reports. Army personnel should use the forms and procedures described in TM 38-750, The Army Maintenance Management System, for these reports. Air Force personnel should use the instructions in AFR 66-1 for maintenance reports and those in T.O. 00-35D-54 for unsatisfactory equipment reports.

b. Reports of Packaging and Handling Deficiencies. To report problems in packaging or handling, fill out and send SF 364 [Report of Discrepancy (ROD)] as instructed in AR 735-11-2/DLAR 4140.55/AFR 400-54.

c. Discrepancy Shipping Report. To report any difference between the equipment listed on the invoice and the equipment received, file a Discrepancy in Shipment Report (DISREP) (SF 361) as instructed in AR-55-38/AFR 400-54.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. TM 750-244-2 contains the instructions for destroying Army electronics material to prevent enemy use.

ADMINISTRATIVE STORAGE. When any Army equipment is to enter administrative storage, perform preventive maintenance on the equipment according to the PMCS charts before storing it. When removing equipment from storage, perform the PMCS procedures to be sure that it works properly. Paragraphs 2-8 and 2-12 of this manual describe the disassembly and repacking of equipment for shipment or limited storage.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

a. Army. If your AN/TSC-60(V)7 needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth ATTN: DRSEL-ME-MQ, Fort Monmouth, New Jersey 07703. We'll send you a reply.

b. Air Force. Submit EIR's in accordance with AFR 900-4.

SAFETY SUMMARY

The following general safety precautions are not related to any specific procedures and therefore do not appear elsewhere in this publication. Personnel must understand and apply these precautions during phases of operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must at all times observe all safety regulations. Do not work inside equipment with power turned on. Under certain conditions dangerous potentials may exist when power controls are off, due to charged capacitors. To avoid casualties, always turn off power and discharge and ground a circuit before touching it.

DO NOT SERVICE OR ADJUST ALONE

Under no circumstances should any person work inside equipment in this system except in the presence of someone who can render aid.

RESUSCITATION

Personnel working with or near high voltages should be familiar with modern methods of resuscitation.

CHAPTER 1

GENERAL INFORMATION

1-1. SCOPE. This chapter contains the description and purpose of Communication Central AN/TSC-60(V)7 (figure 1-1) and the description, purpose, and location of equipment items in the system. Physical descriptions, electrical characteristics, and locations of equipment are included in the tables and illustrations in this chapter.

1-2. PURPOSE OF EQUIPMENT. Communication Central AN/TSC-60(V)7 is a transportable, high-frequency (hf) communication terminal that permits full-duplex voice and/or data communication in the 2.0- to 29.9999-MHz frequency range. The terminal is equipped with a teletypewriter (tty) subsystem that consists of a teletypewriter and modems that convert the dc data to FSK tones for transmission. The tty subsystem can be used with either an AN/UGC-74 or AN/UGC-129 teletypewriter. Data signals from the tty subsystem can be patched to a TSEC/KWX-11 and TSEC/KW-7 for secure transmissions. The tty subsystem also has modems that accept up to eight channels of subscriber tty data. Jackfields permit patching the data signals into the radio for transmission and reception. The radio operates in independent sideband (ISB), amplitude modulation equivalent (AME), or continuous wave (CW) modes. The AN/TSC-60(V)-7 can be moved by aircraft, helicopter, ship, truck, or rail for rapid global deployment. The shelter is normally mounted on a 1-¼-ton military vehicle for operation or rapid ground transport.

1-2.1. Radio. The radio equipment has four 3-kHz ISB channels with 1.0-kW peak envelope power (pep)/average transmit power output. The radio equipment tunes automatically and operates in the 2.0- to 29.9999-MHz frequency range. The radio can operate in either simplex or duplex mode, and accepts local or remote control. Controls necessary for local operation of the radio are on the front panels of the radio equipment. Front-panel indicators display the status of the radio equipment. The radio equipment can receive/transmit voice or data signals. A remote control unit controls remote operation of the radio equipment. Front-panel indicators on the remote control show the status of the radio equipment. Associated equipment includes a radio patch-panel and jackfields that route radio input/output signals.

1-2.2. Tty Subsystem. The teletypewriter subsystem consists of a single-channel (Tempest) modem, a teletypewriter, an 8-channel modem, and two 4-channel keyer/converter shelves. The single-channel FSK modem interfaces the teletypewriter with the audio circuits of the radio equipment. The 8-channel FSK modem with associated keyers and converters permits connection of up to eight channels of subscriber tty lines. The FSK modems operate in full duplex. The teletypewriter data can be routed through the TSEC/KWX-11 and TSEC/KW-7 to permit secure tty transmissions.

1-2.3. Field Telephones. The AN/TSC-60(V)7 has a TA-312 (2-wire) and a TA-838 (4-wire) field telephone. The field telephones are used for landline communications with other like telephones.

1-3. DESCRIPTION OF EQUIPMENT. The following paragraphs describe the components of Communication Central AN/TSC-60(V)7.

1-3.1. Electrical Equipment Shelter S-250(TBA)/G. Electrical Equipment Shelter S-250(TBA)/G (figure 1-2) houses the electrical and electronic components of the radio subsystem, tty subsystem, and associated equipment. The shelter has two skids that fit the loading requirements of a type M705, M715, or XM561 military vehicle. Air intake and exhaust ports on the blower assembly have hinged protective covers. The protective cover for the environmental control unit (ECU) is hinged at the bottom and has a support bar to hold the cover open at right angles to the shelter wall. Captive screws fasten the covers to the shelter when closed. Four lift/tiedown rings are attached to the four upper-end corners of the shelter. The lifting sling is attached to the lift rings during air-lift. Four towing rings are attached to the four lower-end corners of the shelter. Two recessed folding steps that allow access to the shelter roof are on the right side of the shelter. At the rear end of the shelter are a power entry panel on the left, a signal entry panel on the right, and a shelter door. The door has an inner door that allows access into the shelter when the shelter is on a truck with the tailgate closed. Placards on the door contain rigging, lifting, and general information for the shelter. Primary power cables connect to the power entry panel. Signal, control, and antenna coaxial cables connect to the signal entry panel. Refer to table 1-1 for shelter weight, dimensions, and power requirements.

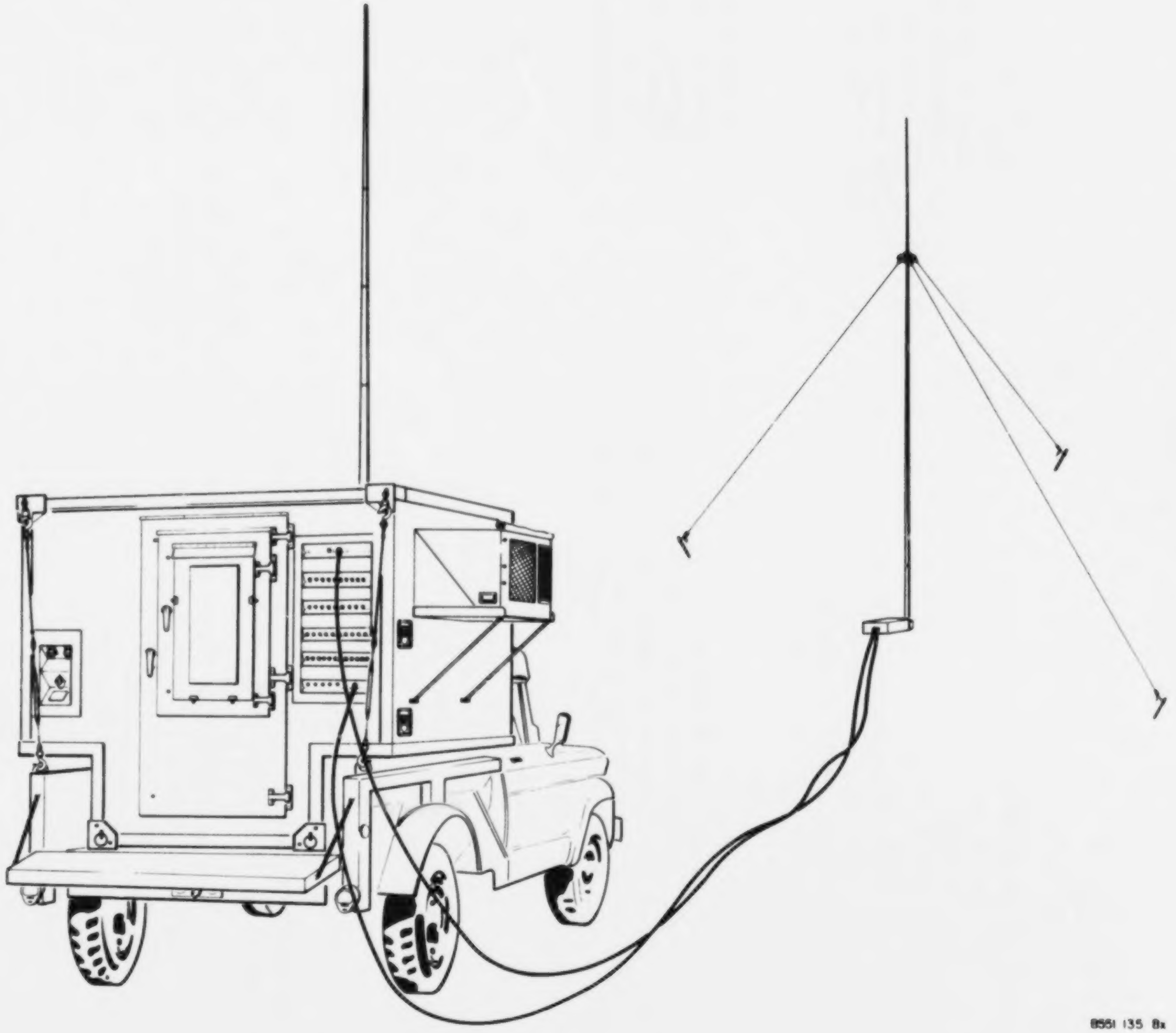


Figure 1-1. Communication Central AN/TSC-60(V)7 (Mounted on 1-¼-Ton Truck)

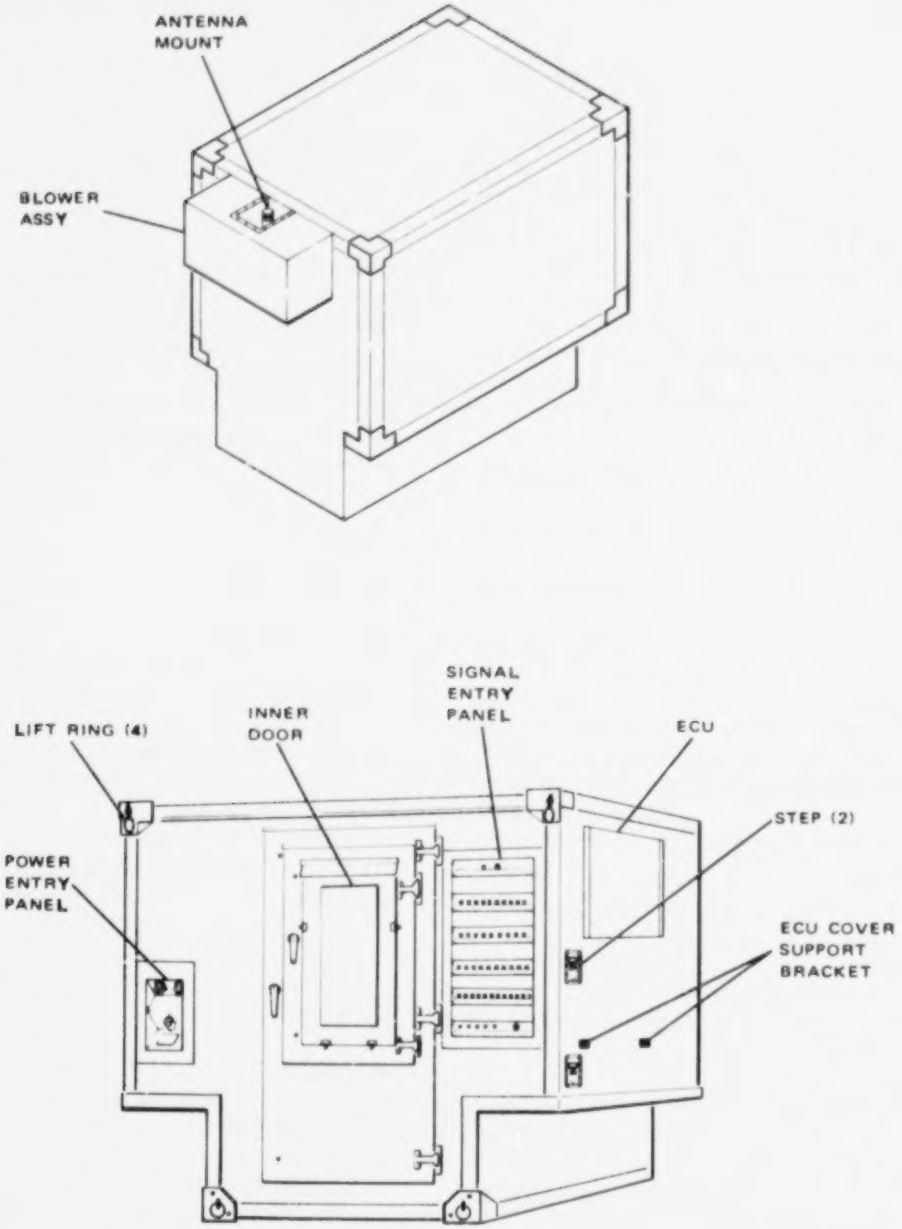

ANTENNA MOUNT
BLOWER ASSY
SIGNAL ENTRY PANEL
INNER DOOR
LIFT RING (4)
ECU
STEP (2)
POWER ENTRY PANEL
ECU COVER SUPPORT BRACKET
B551 142 Bx

Figure 1-2. Shelter Exterior Details

Table 1-1. Leading Particulars

Characteristic	Description
Communication Central AN/TSC-60(V)7	
Primary Power	120/208 V ac 10%, 3 phase, 50/60 or 400 Hz, 10-kW maximum
Dimensions:	
Height	1.78 m (5.8 ft)
Width	2.01 m (6.6 ft)
Length	2.20 m (7.2 ft)
Weight	About 1134 kg (2500 lb)
Radio Receiver R-2222/TSC-60(V) (HF-8054A)	
Primary Power	115 V ac ± 10%, single phase, 47 to 420 Hz, 80 W maximum
Dimensions:	
Height	177.8 mm (7 in.)
Width	482.6 mm (19 in.)
Depth	619 mm (24.4 in.)
Weight	21.8 kg (48 lb) maximum
Radio Transmitter T-1453/TSC-60(V) (HF-8014A)	
Primary Power	115 V ac ± 10%, single phase, 47 to 420 Hz, 80 W maximum
Dimensions:	
Height	177.8 mm (7 in.)
Width	483 mm (19 in.)
Depth	619 mm (24.4 in.)
Weight	21.8 kg (48 lb)
Bandpass Filter F-1531/TSC-60(V) (HF-8060)	
Primary Power	115 V ac ± 10%, single phase, 47 to 420 Hz, 50 W maximum

Table 1-1. Leading Particulars-Continued

Characteristic	Description
Bandpass Filter F-1531/TSC-6-(V) (HF-8060)-Continued	
Dimensions:	
Height	132.6 mm (5.22 in.)
Width	482.6 mm (19.00 in.)
Depth	538.2 mm (21.19 in.)
Weight	12.2 kg (27 lb)
VFT System (Frederick 1290)	
Primary Power	115/230 V ac ± 10% 50 to 400 Hz, 120 W maximum
Dimensions:	
Height	177.8 mm (7 in.)
Width	482.6 mm (19 in.)
Depth	482.6 mm (19 in.)
Weight	13.6 kg (30 lb)
High-Level Interface 1290HL	
Primary Power	+5 V dc ±12 V dc from 1290 VFT System; ±48 to ±130 V dc from 106A-1 Loop Supply
Dimensions:	
Height	133.3 mm (5-¼ in.)
Width	482.6mm (19 in.)
Depth	260.3 mm (10-¼ in.)
Weight	
106A-1 Power Supply	
Primary Power	115/230 V ac, 50 to 400 Hz
Dimensions:	
Height	133.3 mm (5-¼ in.)
Width	482.6 mm (19 in.)

Table 1-1. Leading Particulars-Continued

Characteristic	Description
1-6A-1 Power Supply-Continued	
Depth	190.5 mm (7-½ in.)
Weight	5.4 kg (12 lb)
HF-8023 1-kW Power Amplifier	
Primary Power	208/220/230/240 V ac ± 10%, 3-phase, 47 to 420 Hz
Dimensions:	
Height	266.7 mm (10.5 in.)
Width	482.6 mm (19 in.)
Depth	629.9 (24.8 in.)
Weight	23.6 kg (52 lb) maximum
HF-8032 Power Supply	
Primary Power	208/220/230/240 V ac ± 10%, 3-phase, 47 to 420 Hz
Dimensions:	
Height	222.2 mm (8.75 in.)
Width	482.6 mm (19 in.)
Depth	648.2 mm (25.52 in.)
Weight	35.4 kg (78 lb) maximum
Antenna Coupler (HF-8040A)	
Primary Power	105/115/122/210/230/244 ± 10% V ac, single phase, 47 to 420 Hz, 200 VA
Dimensions:	
Height	387.3 mm (15.25 in.)
Width	531.8 mm (20.94 in.)
Depth	997.4 mm (39.27 in.)
Weight	35.4 kg (78 lb)

Table 1-1. Leading Particulars-Continued

Characteristic	Description
MPC-1000T RTTY Terminal Unit	
Primary Power	115/230 V ac ±25%, 40 to 400 Hz, 15 watts
Dimensions:	
Height	88.9 mm (3.5 in.)
Width	482.6 mm (19 in.)
Depth	228.6 mm (9 in.)
Weight	5.4 kg (12 lb)

1-3.2. Shelter Floor Plan. The floor plan (figure 1-3) shows the locations of equipment within the shelter, and the following paragraphs describe the locations. The shelter is mounted on a vehicle so that the shelter door is at the rear. In this arrangement, the equipment rack is on the front wall, and the ECU is on the right wall.

1-3.2.1. Right Wall. The ECU, TA-312 field telephone, and TA-838 field telephone are mounted on the right wall (figure 1-4). The equipment rack is mounted on shock isolators to the front wall and steps on each side of the shelter.

1-3.2.2. Left Wall. Two light fixtures with a blackout light, the clock, and the power/secure rack are mounted on the left wall (figure 1-5). Mounted in the power secure rack are the power distribution panel and the secure equipment.

1-3.2.3. Front Wall. The equipment rack is mounted on shock isolators to the front wall (figure 1-6).

1-3.2.4. Rear Wall. Signal entry panel 1A3, the power/secure rack, and a light fixture are on the shelter rear wall (figure 1-7). The shelter door has an inner door that can be opened when the shelter is on the vehicle and the tailgate is up. The fire extinguisher and hammer are mounted on the door. The first-aid kit and main power panel are mounted on the power/secure rack. The traverse rod for the blackout curtain and the blackout switch are mounted above the shelter door.

1-4. DESCRIPTION AND PURPOSE OF AN/TSC-60(V)7 MAJOR COMPONENTS. The following paragraphs describe the major components of Communication Central AN/TSC-60(V)7. Table 1-2 is a complete list of major components of Communication Central AN/TSC-60(V)7.

1-4.1. Signal Entry Panel. Signal entry panel 1A3 is mounted in an opening in the right rear wall of the shelter. The panel has two coaxial connectors (antenna inputs) and one multipin connector for antenna coupler control cables on the front of the assembly. The assembly also has 112 binding posts arranged in four horizontal rows. The binding posts permit external lines to connect to shelter circuits through individual line pairs connected to binding post pairs. The signal entry panel extends into the shelter (figure 1-4) and contains radio frequency interference (rfi) filters and electrical surge arrestors for each of the line pairs.

1-4.2. Power Entry Panel. Power entry panel A2A6 is mounted in an opening in the left rear wall of the shelter. The panel has a connector to connect primary power to the shelter and has two utility outlets. A circuit breaker to turn power to the utility outlets on and off and a wingnut to connect a ground strap are also on the panel.

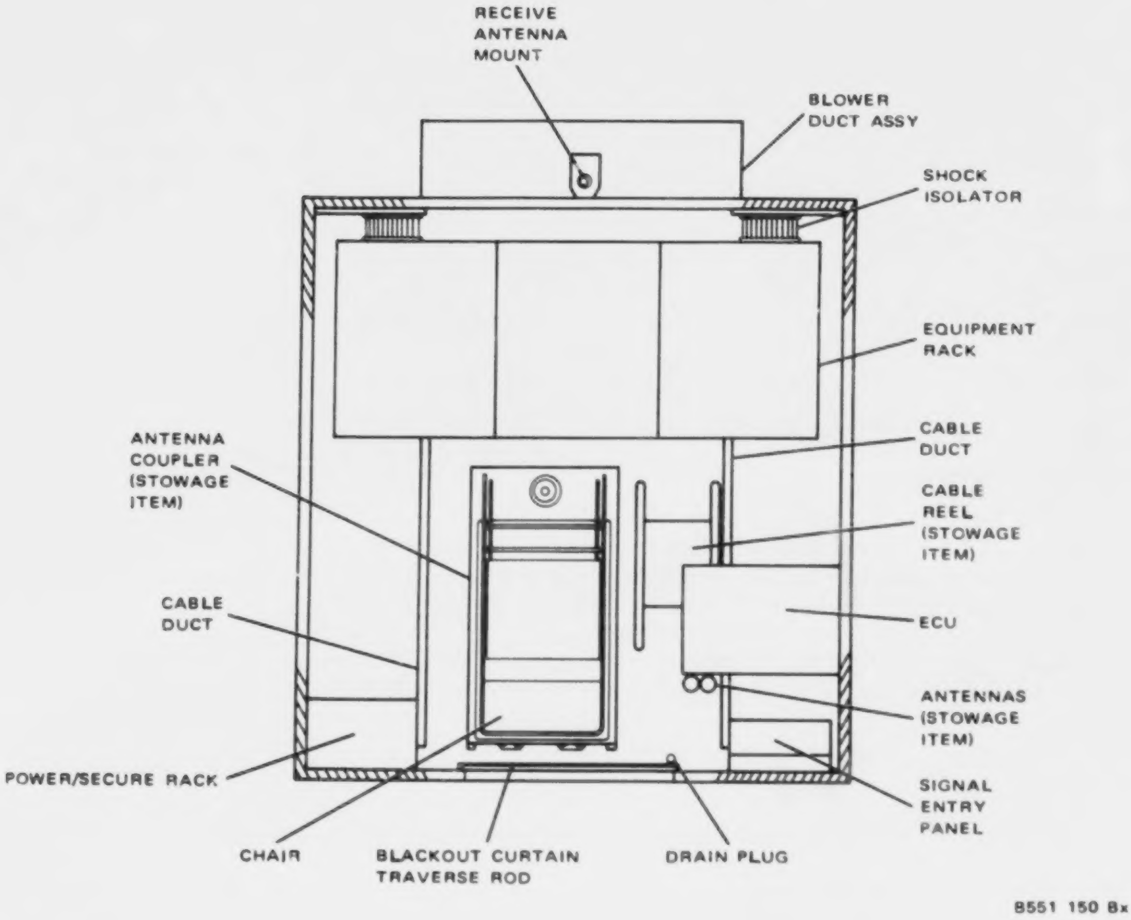

RECEIVE ANTENNA MOUNT
BLOWER DUCT ASSY
SHOCK ISOLATOR
EQUIPMENT RACK
ANTENNA COUPLER (STOWAGE ITEM)
CABLE DUCT
CABLE REEL (STOWAGE ITEM)
CABLE DUCT
ECU
ANTENNAS (STOWAGE ITEM)
POWER/SECURE RACK
SIGNAL ENTRY PANEL
CHAIR
BLACKOUT CURTAIN TRAVERSE ROD
DRAIN PLUG
8551 150 Bx

Figure 1-3. Shelter Floor Plan (Transport Mode)

1-4.3. Equipment Rack. Equipment rack 1A1 (figures 1-4 and 1-6) is on shock isolators bolted to the shelter walls and steps. The equipment rack has slide mounts and brackets for mounting all the radio and tty equipment. The rack has a storage drawer and a pullout shelf on which the tty is mounted. The pullout shelf has two foldup leaves on each side that serve as a work area.

1-4.4. Control-Monitor C-11070/TSC-60(V). Control-Monitor C-11070/TSC-60(V) (373J-1) (1A1A3A5) controls and monitors a receiver or exciter inside the shelter or from a remote location. The unit contains a microprocessor that sends control data and receives monitor data through serial data transmission lines. The microprocessor converts operator inputs from the front-panel switches into corresponding data words and transmits the data word to the radio. The unit also receives, processes, and visually displays monitor data. The monitor data displays show the status of the receiver, exciter, preselector, power amplifier, and antenna coupler. The unit allows switch-selectable audible monitoring of the receive audio channels. Refer to T.O. 31S1-2TSC60-181, Combined Operation, Maintenance, and Illustrated Parts Breakdown for Control-Monitor C-11070/TSC-60(V), for a detailed description.

1-4.5. Radio Receiver R-2222/TSC-60(V). Radio Receiver R-2222/TSC-60(V) (HF-8054A receiver) (1A1A3A3) is an automatically tuned 4-channel ISB receiver; it operates in the 2.0- to 29.9999-MHz frequency range and can be tuned in

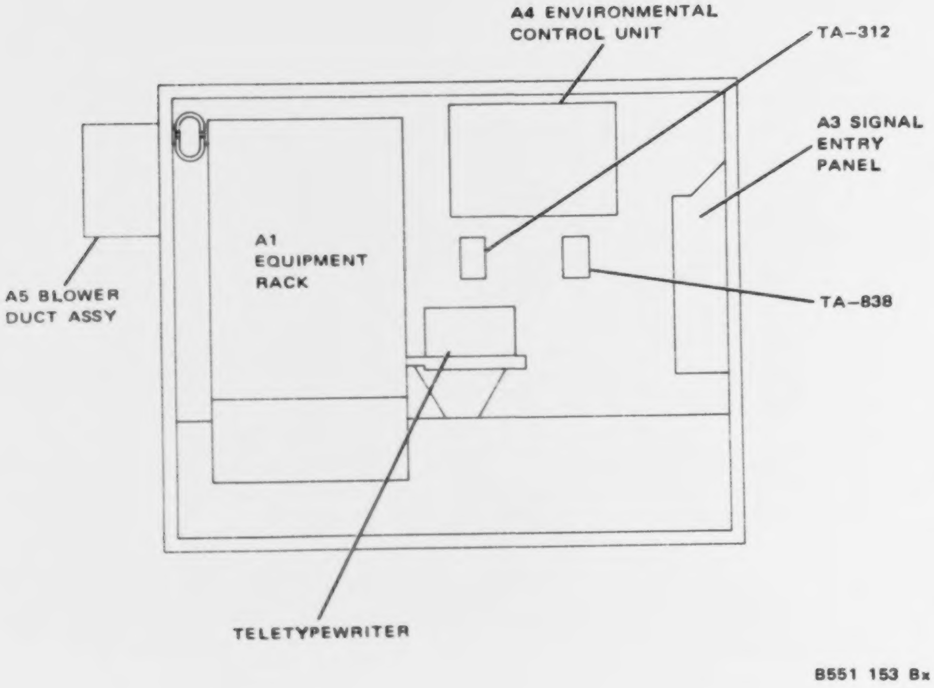

A4 ENVIRONMENTAL CONTROL UNIT
TA-312
A3 SIGNAL ENTRY PANEL
A1 EQUIPMENT RACK
A5 BLOWER DUCT ASSY
TA-838
TELETYPEWRITER
B551 153 Bx

Figure 1-4. Shelter Right Wall

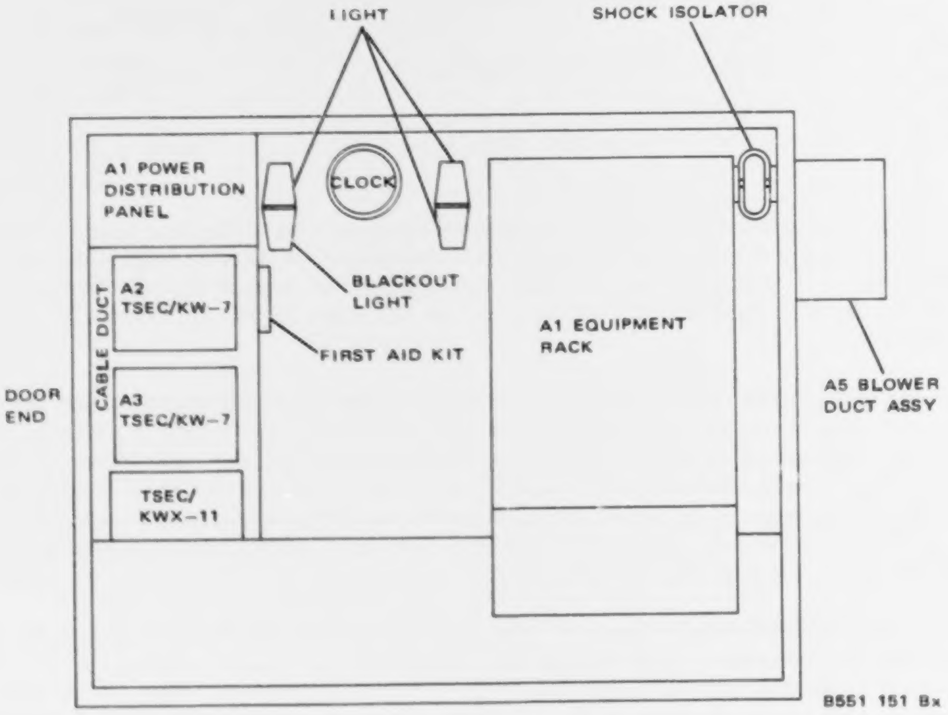

LIGHT
SHOCK ISOLATOR
A1 POWER DISTRIBUTION PANEL
CLOCK
CABLE DUCT
A2 TSEC/KW-7
BLACKOUT LIGHT
A1 EQUIPMENT RACK
FIRST AID KIT
DOOR END
A3 TSEC/KW-7
A5 BLOWER DUCT ASSY
TSEC/ KWX-11
B551 151 Bx

Figure 1-5. Shelter Left Wall

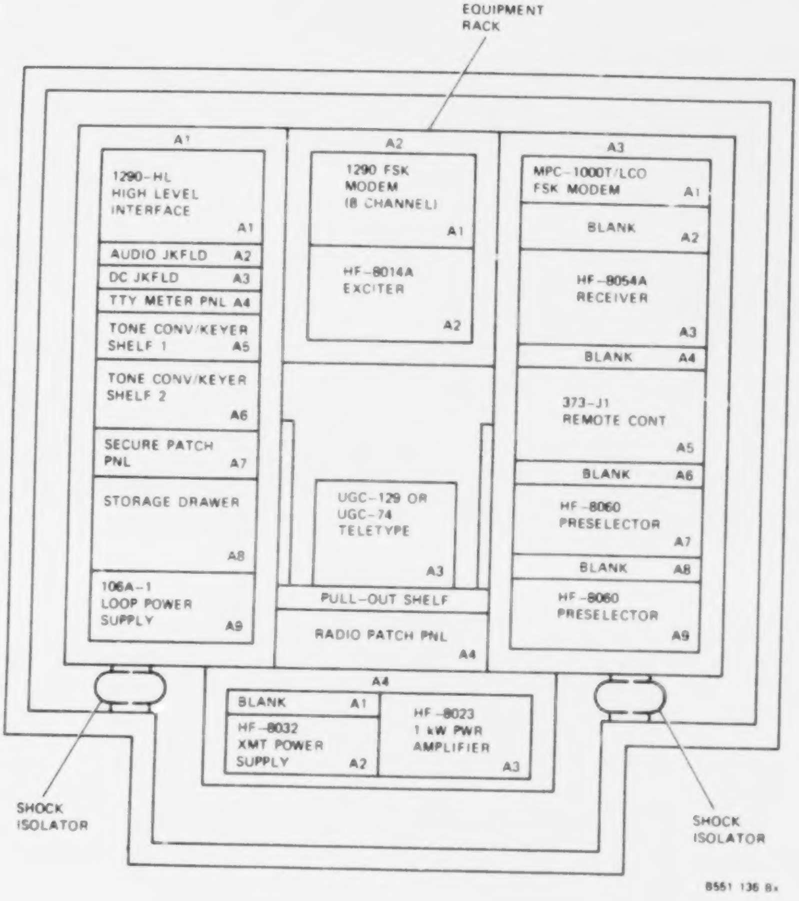

EQUIPMENT RACK
A1
1290-HL HIGH LEVEL INTERFACE A1
AUDIO JKFLD A2
DC JKFLD A3
TTY METER PNL A4
TONE CONV/KEYER SHELF 1 A5
TONE CONV/KEYER SHELF 2 A6
SECURE PATCH PNL A7
STORAGE DRAWER A8
106A-1 LOOP POWER SUPPLY A9
A2
1290 FSK MODEM (8 CHANNEL) A1
HF-8014A EXCITER A2
UGC-129 OR UGC-74 TELETYPE A3
PULL-OUT SHELF
RADIO PATCH PNL A4
A3
MPC-1000T/LCO FSK MODEM A1
BLANK A2
HF-8054A RECEIVER A3
BLANK A4
373-J1 REMOTE CONT A5
BLANK A6
HF-8060 PRESELECTOR A7
BLANK A8
HF-8060 PRESELECTOR A9
A4
BLANK A1
HF-8032 XMT POWER SUPPLY A2
HF-8023 1 kW PWR AMPLIFIER A3
SHOCK ISOLATOR
SHOCK ISOLATOR
8551 136 8x

Figure 1-6. Shelter Front Wall

100-Hz steps. All controls and indicators necessary for operation of the receiver are on the front panel. Control-Monitor C-11070/TSC-60(V) gives local or remote control of the receiver. The receiver is mounted on slides with cable retractors; these slides allow the receiver to be extended from the rack to allow access to the inside of the unit. Refer to T.O. 31S1-2TSC60-201, Combined Operation, Maintenance, and Illustrated Parts Breakdown for Radio Receiver R-2222/TSC-60(V), for a detailed description.

1-4.6. Radio Transmitter T-1453/TSC-60(V). Radio Transmitter T-1453/TSC-60(V) (HF-8014A Exciter) (1A1A2A2) is an automatically tuned, ISB, 4-channel multiplex, CW and AME transmitter. The exciter operates in the 2.0- to 29.9999-MHz frequency range and can be tuned in 100-Hz steps. All controls and indicators necessary for operation of the exciter are on the front panel. Control-Monitor C-11070/TSC-60(V) gives local or remote control of the exciter. The exciter is mounted on slides with cable retractors; these slides allow the exciter to be extended from the rack to allow access to the inside of the unit. Refer to T.O. 31S1-2TSC60-211, Combined Operation, Maintenance, and Illustrated Parts Breakdown for Radio Transmitter T-1453/TSC-60(V), for a detailed description.

1-4.7. Bandpass Filter F-1531/TSC-60(V). Bandpass Filter F-1531/TSC-60(V) (HF-8060 Preselector) (1A1A37 and 1A1A3A9) is an automatically servo-tuned, 3-pole bandpass filter. The preselector, which is controlled by information from the associated receiver or exciter, can be tuned between 2.0 and 29.9999 MHz. In the receiver mode, the HF-8060 provides additional selectivity and protection in the presence of strong signals. In the transmit mode, the preselector gives added filtering for the exciter output. The preselector is mounted on slides with cable retractors; these slides allow the preselector to

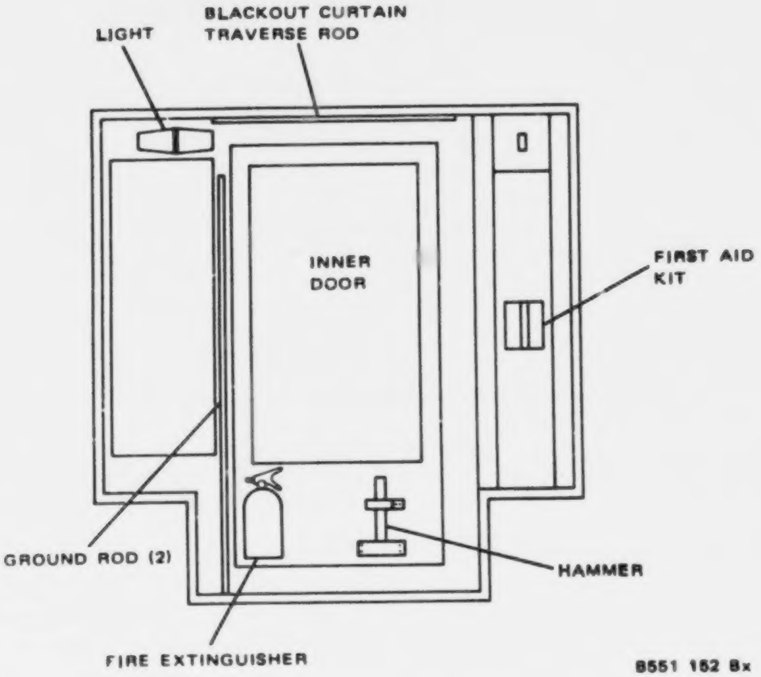

LIGHT
BLACKOUT CURTAIN TRAVERSE ROD
INNER DOOR
FIRST AID KIT
GROUND ROD (2)
HAMMER
FIRE EXTINGUISHER
8551 152 8x

Figure 1-7. Shelter Rear Wall

Table 1-2. Equipment Supplied

Nomenclature (if assigned)	Common name	Qty	Reference designation
Electrical Equipment Shelter (Nomenclature TBA)	Shelter	1	
	Equipment rack	1	1A1
	1290 high-level interface	1	1A1A1
	Audio jackfield	1	1A1A2
	Dc jackfield	1	1A1A3
	Voltmeter panel	1	1A1A4
	Tone converter/keyer shelf 1	1	1A1A5
	Tone converter/keyer shelf 2	1	1A1A6
Tk-201F Tone Keyer	Tone keyer	8	1A1A5A1/3/5/7 1A1A6A1/3/5/7

Table 1-2. Equipment Supplied-Continued

Nomenclature (if assigned)	Common name	Qty	Reference designation
TC-301F Tone Converter	Tone converter	8	1A1A5A2/4/6/8 1A1A6A2/4/6/8
	Secure patch-panel	1	1A1A1A7
	Storage drawer	1	1A1A1A8
	106A-1 loop power supply	1	1A1A1A9
	1290 FSK modem	1	1A1A2A1
Radio Transmitter T-1453/TSC-60(V)	HF-8014A Exciter	1	1A1A2A2
	Radio patch panel	1	1A1A2A4
	MPC-1000T/LCO FSK Modem	1	1A1A3A1
Radio Receiver R-2222/TSC-60(V)	HF-8054A Receiver	1	1A1A3A3
Control Monitor C-11070/TSC-60(V)	373J-1 Remote Control	1	1A1A3A5
Bandpass Filter F-1531/TSC-60(V)	HF-8060 Preselector	2	1A1A3A8 1A1A3A9
	HF-8032 Power Supply	1	1A1A4A2
	HF-8023 Power Amplifier	1	1A1A4A3
	Power/secure rack	1	1A2
	Power distribution panel	1	1A2A1
	Signal entry panel	1	1A3
	ECU	1	1A4
	Blower duct assembly	1	1A5
	Antenna coupler assembly	1	1A6
	Transmit whip antenna	1	
	Receive whip antenna	1	
	Sledge hammer	1	
	Fire extinguisher	1	

Table 1-2. Equipment Supplied-Continued

Nomenclature (if assigned)	Common name	Qty	Reference designation
	Clock	1	
	First aid kit	1	
	Ground rod	2	
	Lifting/tiedown sling kit	1	
	Flashlight	1	

be extended from the rack to allow access to the inside of the unit. Refer to T.O. 31S1-2TSC60-271, Combined Operation, Maintenance and Illustrated Parts Breakdown for Bandpass Filter F-1531/TSC-60(V), for a detailed description.

1-4.8. CV-3116 Tone Converter (TC-301F). The CV-3116 is a self-contained plug-in unit that converts FSK input signals to ±6-volt (low-level) data signals. The tone converter operates on a center frequency of 1275 Hz with 85-Hz deviations. A front-panel switch selects either positive or negative mark operation. The tone converter plugs into an 18-contact receptacle in the rack adapter shelf in which it is mounted. The receptacle provides both power and signal connections. Refer to T.O. 31W2-2T-102 for a detailed description.

1-4.9. KY-798 Tone Keyer (TK-201F). The KY-798 is a self-contained plug-in unit that converts low-level (±6-volt dc) polar inputs to FSK tone signals. The converted FSK tone signal has a center frequency of 1275 Hz with 85-Hz deviations. The KY-798 has a front-panel adjustable line-level control and a function-select switch that selects line, continuous mark, or continuous space operation. The KY-798 plugs into an 18-contact receptacle in the rack adapter shelf in which it is mounted. The receptacle provides both power and signal connections. Refer to T.O. 31W2-2T-102 for a detailed description.

1-4.10. Model 1290 VFT System. The 1290 VFT System (1A1A2A1) is a frequency-division multiplex (FDM) modem that can transmit and receive up to eight channels of FSK tones. The 1290 VFT System consists of eight modulators, eight demodulators, a composite card, and a power supply that plugs into the 1290 chassis. The individual modules have front-panel controls and indicators to aid in operation of the equipment. Signal connections are at the rear of the unit. Refer to 31S1-2TSC60-301 or TM 11-5895-1185-13-2 for a detailed description.

1-4.11. 106A-1 Loop Power Supply. The rack-mounted 106A-1 Loop Power Supply (1A1A1A9) supplies power to the 1290 high-level interface to be used with high-level teleprinter loops. The 106A-1 is configured for ±60 volts dc. Refer to T.O. 31S1-2TSC60-301 or TM 11-5895-1185-13-2 for a detailed description.

1-4.12. 1290HL Interface. The 1290HL Interface (A1A1A1) converts full-duplex, high-level neutral or polar voltage levels to ±6 volts (low level) to interface with the 1290 VFT System. If the 1290 VFT is transmitting, the 1290HL converts the high levels from the subscriber lines to a low-level logic. If the 1290 VFT is receiving, the 1290HL converts low-level logic to high levels for transmission over the subscriber lines. The 1290HL obtains its power from the 1290 VFT and 106A-1 power supply. Refer to T.O. 31S1-2TSC60-301 or TM 11-5895-1185-13-2 for a detailed description.

1-4.13. MPC-1000T/LCO Tempest Rtty Terminal Unit. The The MPC-1000T/LCO (1A1A3A1) is a single-channel FSK modem capable of both full-duplex or receive-only modes of operation. The MPC-1000T/LCO converts the dc logic signals from the tty to FSK audio tones and converts incoming FSK audio tones to dc data for input to the tty. Front-panel controls and indicators permit control of the unit. All signal connections are made at the rear panel. A front-panel switch selects among three different mark-space tone frequency pairs (A-1275 ±42.5, B-2000 ±425, C-600 ±100). The unit also contains an RY generator that is set for 75 baud. A front-panel switch selects bandwidth modules that optimize the bandwidth of the unit to the baud rate of the incoming signal (narrow: 50 baud, medium: 75 baud, wide: 110 baud).

1-4.14. Communications Terminal AN/UGC-74A(V)3. The AN/UGC-74A(V)3 (1A1A2A3) is a full-duplex, asynchronous (ASCII or Baudot) communications terminal. The terminal is capable of MIL-STD-188-114 and normal input keying (NIK) interfaces; it composes, edits, transmits, receives, stores, and prints messages. Using the internal clock, the terminal can be used at signaling speeds of 45.5, 50, 75, 150, 300, 600, and 1200 baud. Other rates may be used with an external clock. Refer to TM 11-5815-602-12, Operator's and Organizational Maintenance Manual, for a more detailed description.

1-4.15. HF-8023 Power Amplifier. The HF-8023 Power Amplifier (1A1A4A3) is an automatically tuned linear power amplifier (pa) that provides a 1-kW rf power output. The pa accepts signals in the 2.0- to 29.9999-MHz range from an associated exciter and amplifies the rf signal to 1-kW peak-envelope/average power into a 50-ohm load. Refer to T.O. 31S1-2TSC60-291 or TM 11-5895-1185-13-1 for a detailed description.

1-4.16. HF-8032 Power Supply. The HF-8032 power supply (1A1A4A2) provides all power requirements for the HF-8023 pa. A front-panel meter monitors the dc voltage outputs of the power supply. Circuit breakers on the front panel turn operating voltages on and off to each of the modules in the pa. Refer to T.O. 31S1-2TSC60-291 or TM 11-5895-1185-13-1 for a detailed description.

1-4.17. HF-8040 Antenna Coupler. The HF-8040 Antenna Coupler automatically matches the impedance of the transmit antenna to the output of the pa. The HF-8040 operates over a frequency range of 1.6 to 30 MHz and requires 75- to 200-watt tuning power. The maximum rf input power is 1.26-kW pep and 1-kW average power. The HF-8040 uses high-level interface circuits and rfi filtering to reduce rf interference problems caused by interconnect cable routing. Refer to T.O. 31S1-2TSC60-311 or TM 11-5895-1185-13 for a detailed description.

1-4.18. Radio Patch Panel. Radio patch panel A1A2A4 is mounted in the equipment rack. Six connectors mounted on the front panel can connect rf inputs and control signals to the local or a remote pa. One connector can connect the receiver to the pa t/r relay for simplex operation.

1-4.19. Secure Patch-Panel. Secure patch-panel A1A1A7 is mounted in the equipment rack. Three front-panel connectors can patch data signals from the local tty into, or can bypass, the secure data lines. Three triple-jack sets permit monitoring of the teletype low-level signals, or insertion of a test signal into the secure equipment. When patched to the three triple-jack sets, a front-panel dc meter measures the dc data signals.

1-4.20. Equipment Rack. Equipment rack 1A1 is mounted on shock isolators bolted to the rear shelter wall and floor ledge. The equipment rack has mounting space for all the radio and tty equipment and has a storage drawer and a pullout shelf with folding leaves. The tty mounts on the pullout shelf and the foldout leaves serve as a work area.

1-4.21. Voltmeter Panel. Voltmeter panel A1A1A4 has a front panel-mounted dc meter that can monitor the dc data signals in the shelter. The input jack for the dc meter is also on the front panel.

1-4.22. Blower Duct Assembly. Blower duct assembly A5 is mounted on the front wall of the shelter. The assembly has nine blower fans mounted on the inside of the assembly. Six of the blowers exhaust air from the shelter. The remaining three blowers exhaust cooling air from the power amplifier. Vents in the blower assembly can be turned so that the exhaust air from the pa circulates into the shelter for heating. The air intake and exhaust ports at the sides of the blower assembly have protective covers that are hinged at the top; these covers have folding side panels that hold them out from the assembly at about 40 degrees when they are open. Captive locking pins fasten the open covers to the assembly or captive screws hold the covers closed.

1-4.23. Audio Jackfield. Audio jackfield 1A1A1A2 is a triple-row, miniature telephone jack panel with 144 tip, ring, and sleeve type jacks. The jacks are wired as normalled-through line lift and equipment lift jacks; each normalled-through pair has a monitor (bridging) jack. Designation strips above each set of jacks specify jack functions. The jacks patch audio signals into and out of the radio subsystem.

1-4.24. DC Jackfield. Dc jackfield A1A1A3 is the same as the audio jackfield. The jacks patch dc data signals into and out of the tty subsystem.

1-4.25. Power Distribution Panel. Power distribution panel A2A1, at the top of the power/secure rack, accepts 3-phase, 120/208-volt, 50/60- or 400-Hz power from the power entry panel. The power distribution panel includes a voltmeter, an ammeter, 50/60- and 400-Hz frequency meters, circuit breakers, fuses, and switches. This panel distributes three-phase 120/208-volt ac and single-phase 120-volt ac power to shelter equipment by way of wiring through the cable ducts.

1-4.26. Receive Antenna. The receive whip antenna is an omnidirectional antenna composed of eight 1.2-m (4-ft) tubular mast sections that can mount on the shelter. The sections have male and female threaded ends for assembling the antenna. The assembled whip antenna is mounted on a male stub on the shelter blower duct assembly.

1-4.27. Transmit Antenna. The transmit whip antenna (figure 1-8) uses the same element as the receive whip antenna. In the transmit configuration for the AN/TSC-60(V)7, the 9.75-m (32-ft) whip antenna is attached to the coupler assembly. The transmit antenna consists of the whip antenna, three guy ropes, three guy stakes, three guy fasteners, and miscellaneous hardware. The assembled whip antenna is mounted on a male stub on the coupler assembly. When erected with the three guys installed, the transmit whip antenna occupies an area about 9.7 m (32 ft) in diameter

1-4.28 Telecommunications Terminal AN/UGC-129. The AN/UGC-129 is a full-duplex telecommunications terminal with edit capability and text memory. The terminal has MIL-STD-188C, multiple-current loop, low-voltage, and KW-7 interfaces. The user can choose among eight signalling speeds, from 45.5 to 2400 baud. Communications modes include asynchronous (ASCII or BAUDOT), isosynchronous (ASCII), and synchronous (ASCII). Refer to TO 31W4-2UGC129-33) for a detailed description.

1-5. LEADING PARTICULARS. Table 1-1 lists the leading particulars for Communication Central AN/TSC-60(V)7.

1-6. EQUIPMENT SUPPLIED. Table 1-2 lists the equipment supplied with Communication Central AN/TSC-6-(V)7.

1-7. CAPABILITIES AND LIMITATIONS. Table 1-3 lists the capabilities and limitations of the major equipment supplied with Communication Central AN/TSC-60(V)7.

1-8. EQUIPMENT REQUIRED BUT NOT SUPPLIED. Table 1-4 lists the equipment required but not supplied for operation of the AN/TSC-60(V)7.

1-9. RELATED PUBLICATIONS. Table 1-5 lists the related publications for support of Communication Central AN/TSC-60(V)7.

1-10. SPECIAL TOOLS AND TEST EQUIPMENT. Table 1-6 lists the special tools required for maintaining the AN/TSC-60(V)7. Table 1-7 lists the test equipment required for maintaining the AN/TSC-60(V)7.

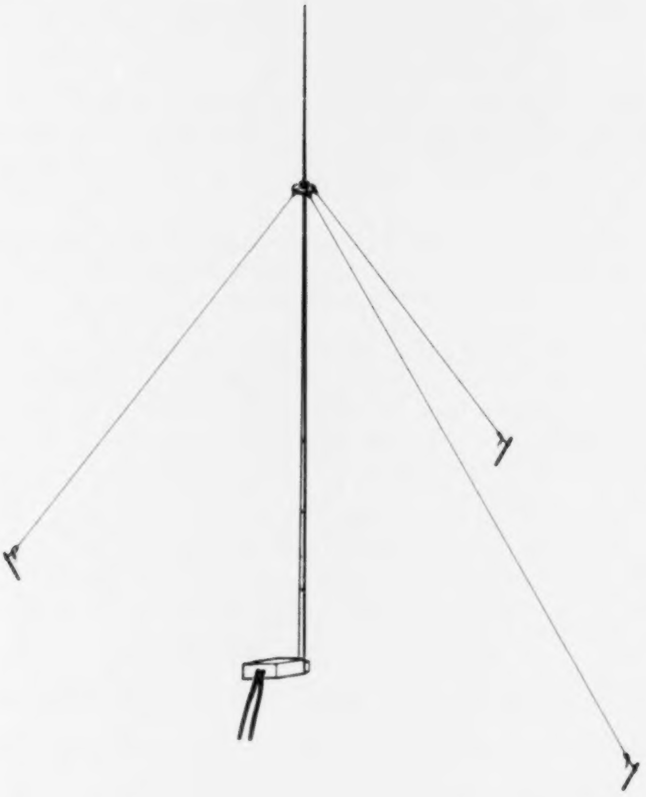


Figure 1-8. Transmit Whip Antenna (Mounted on Coupler Assembly)

Table 1-3. Capabilities and Limitations

Characteristic	Description
Communication Central AN/TSC-60(V)7	
Frequency range	2.0 to 29.9999 MHz
Tuning	Fully automatic
Frequency stability	Not less than 1 part in 10^{-8} from -30° to +50°C (-86° to 122°F)
Transmitter output power	1 kW pep/average

Table 1-3. Capabilities and Limitations-Continued

Characteristic	Description
Operational service conditions	
Temperature	-30° to +50°C (-86° to 122°F)
Relative humidity	95% without condensation over operating temperature range
Altitude	Sea level to 3048 m (10 000 ft)
Snow load	113 kg per m^2 (23 lb per ft^2) on any horizontal surface
Wind	100 km/hr (62 mi/hr)
Rain	51 mm/hr (2 in./hr)
Sand and dust	Desert conditions (MIL-STD-810C)
Solar radiation	0 to 1120 watts per m^2
Nonoperational and storage conditions	
Temperature	-57° to +70°C (-135° to +158°F)
Altitude	Sea level to 12 192 m (40 000 ft)
Wind	300 km/hr (186 mi/hr)
Rain	127 mm/hr (5 in/hr)
Receiver, Radio R-2222/TSC-60(V) (HF-8054A)	
Frequency range	2.0 to 29.999 MHz
Frequency channels	280 000 at 100-Hz intervals
Modes of operation	ISB, CW, AM, net data
Frequency stability (with oven standard)	Not less than 1×10^{-8} over specified temperature range; drift rate not more than 1×10^{-8} per week after 72 hours of continuous operation
Frequency tune time	5 milliseconds maximum; 2 milliseconds nominal
Antenna input impedance	50 ohms nominal, unbalanced
Sensitivity	
ISB	0.7 hard µV (-116 dB mW) for 10-dB mW signal-plus-noise to noise ratio

Table 1-3. Capabilities and Limitations-Continued

Characteristic	Description
Receiver, Radio R-2222/TSC-60(V) (HF-8054A)-Continued	
	NOTE Signal levels are open-circuit, hard microvolts from 50-ohm source.
AM	5.7 hard µV (-98 dB mW) for 10-dB mW signal-plus-noise to noise ratio
Intermodulation Distortion	
In band	-47 dB below either of two input tones at 0.1 V per tone
Out of band	From either of two input tones of -15 dB mW per tone. 50 kHz or more off tune frequency; second and third order distortion products are -60 dB mW.
Spurious responses to external signals	
If. rejection	100-dB mW minimum
Image rejection	100-dB mW minimum
Other spurious signals	-80-dB mW minimum at 20 kHz or more away from center frequency
Internal spurious emissions	Equivalent to 0.5-µV maximum input signal over the 2.0- to 29.9999-MHz frequency range
Adjacent sideband rejection	60-dB mW minimum when adjacent sideband signal produces 1-kHz signal in that channel
Oscillator radiation	Leakage to the antenna does not exceed 140 µV from 2 to 30 MHz.
AGC threshold	1 µ V maximum
AGC control	6-dB mW rise in audio out for signal increase for 1 µ to 2 V
ACG time constants	

AGC mode:	Attack time:	Decay time:
Data	20 ms maximum	15 to 30 ms
Voice	20 ms maximum	1 to 2 seconds
FAX	2 seconds maximum	3 to 6 seconds

Table 1-3. Capabilities and Limitations-Continued

Characteristic	Description
Receiver, Radio R-2222/TSC-60(V) (HF-8054A)-Continued	
Squelch	Operates on audio signal-to-noise ratio of voice signals below 1000 Hz; applies to speaker output only
If. output	20 mV, nominal at 450 kHz into 50 ohms for 3-μV input signal
Rf overload protection	Up to 100-V rf input, power on or off
Audio outputs	
Line	600 ohms ±10%, balances; 0-dB mW nominal, adjustable from -20 to + 10 dB mW
Headphone	600 ohms, nominal; capable of + 10 dB mW minimum
Speaker	8 ohms nominal, capable of 2 W peak minimum
Audio distortion	
Line	1% maximum for 1000-Hz tone at + 10-dB mW in ISB
Headphone	5% maximum for 1000-Hz tone at 10 dB mW in ISB
Speaker	5% maximum for 1000-Hz tone at 2-watt output in ISB
Transmitter, Radio T-1453/TSC-60(V)	
Rf output	200-mW pep maximum
Frequency range	2.0 to 29.9999 MHz
Output impedance	50 ohms
Frequency stability	Not less than 1×10^{-8} over the specified temperature range; drift rate not more than 1×10^{-8} per week after 72 hours continuous operation
Frequency tune time	5 ms maximum; 2 ms nominal
Opposite sideband rejection	-60-dB mW for 1000-Hz modulating frequency
Harmonic radiation	All harmonics at least 40 dB below rated output
Spurious emissions	At 50 kHz or more off carrier frequency, spurious emissions are supressed not less than 80 dB below pep when used with HF-8021 and HF-8022 pa's.

Table 1-3. Capabilities and Limitations-Continued

Characteristic	Description
Transmitter, Radio T-1453/TSC-60(V)-Continued	
Intermodulation distortion	Not less than 50 dB below either of two equal output tones (200-mW pep) for line audio input signals spaced 200 Hz or more apart
Modes of operation	ISB, AME, and CW
Audio input levels	-26 to + 10 dB mW
Carrier levels:	
Tune power	-3 dB from nominal full pep when controlled by pa TB TGC
AM	-6 dB from full pep
Pilot carrier	20 ± 1 dB mW, adjustable over the range of -13 to -23 dB mW, referred to rated output
Carrier suppression	In SSB, carrier is at least 55 dB below the output level of either of two equal test tones at rated pep.
Filter, Bandpass F-1531/TSC-60(V) (HF-8060)	
Frequency range	2.0 to 29.9999 MHz
Gain	Not less than 0, not more than 6 dB
Selectivity	Response at 10% or more off tuned frequency not less than 47 dB below passband response
Noise figure	Receive: not more than 12 dB; transmit: not more than 18 dB
Out-of-band overload	Trip-off level not less than 200 V at 10% off tuned frequency
In-band overload	For overloading signals less than 10% off tuned frequency; trip-off level not less than 20-V rms, open circuit from 50-ohm source
Maximum input	When overload protection trips, will withstand 500-V rms open circuit without damage at sea level; derate linearly to 70% at 3657.6-m (12 000-ft) altitude
HF-8023 1-kW Power Amplifier	
Frequency range	2.0 to 30.000 MHz

Table 1-3. Capabilities and Limitations-Continued

Characteristic	Description
HF-8023 1-kW Power Amplifier-Continued	
Rf output power	1000-watt pep ±0.5 dB with two or more equal amplitude tones; 1000-watt average ±0.5 dB with 1-tone continuous duty into a 50-ohm resistive load. Transient peak power output 2200 watts nominally when rf input drive is stepped from 0 volt to + 10 dB of overdrive during pa key-on conditions in high-power mode; in low-power mode, transient peak power output is about 1500 watts under same conditions.
Input impedance	50 ohms, unbalanced
Output impedance	50 ohms, unbalanced
Input vswr	1.3 to 1 maximum
Output vswr	1.3 to 1 maximum
Tuning time	350 ms maximum (after receipt of key signal and rf drive)
Gain variation	Variation in overall rf power gain between any two frequencies from 1.6000 to 30.000 MHz does not exceed 4.0 dB
Output intermodulation distortion	Odd-order intermodulation distortion products of rf output signal at rated pep are at least 30 dB below either tone of a 2-tone, equal-amplitude test signal. (Intermodulation distortion and all spurious emissions of 2-tone test signal generator are at least 50 dB below either tone.)
Harmonic radioation	Second and higher order harmonic outputs at least 55 dB below fundamental power output to 50-ohm resistive load at power levels up to rated power output
Rf output wide-band noise	Output noise measured in a 3-kHz bandwidth at frequencies ±200 kHz from operating frequency NLT 100 dB below output at rated power output
HF-8032 Power Supply	
Output power	50/40 V dc, 15 A 50/40 V dc, 15 A 50/40 V dc, 15 A 50/40 V dc, 15 A 35 V dc, 15 A 28 V dc, 2.2 A 27 V dc, 5.5 A

Table 1-3. Capabilities and Limitations-Continued

Characteristic	Description
HF-8032 Power Supply-Continued	
	12 V dc, 1 A -12 V dc, 0.5 A 5 V dc, 6 A 230 V ac, 1 A
VFT System	
Input impedance (composites 1 and 2)	Balanced 600 ohms or 10 kilohms (strappable on composite card)
Input dynamic range (composite 1 and 2)	+6- to -40-dB mW peak composite
Output level (composites 1 and 2)	Adjustable +6- to -30 dB mW peak into 600 ohms with an additional 6-dB attenuation when ISB switch position is selected; automatic level compensation or fixed level can be selected.
Output frequency range	300 to 3300 Hz
Input frequency range	300 to 3300 Hz
Data inputs to modulator	MIL-STD-188C compatible
Data outputs from demodulator	MIL-STD-188C compatible
High-Level Interface	
Loop current output	20 to 60 mA
Loop voltage output	±48 to ±130 V dc
Loop keying	Polar or neutral
Maximum data rate	300 baud
Distortion	Less than 1%
Input sensitivity	10 to 60 mA
Operating mode	Half or full duplex
106A-1 Power Supply	
Output	1.3 A maximum
Output ripple (full load)	1.1 volt peak-to-peak maximum

Table 1-3. Capabilities and Limitations-Continued

Characteristic	Description
Antenna Coupler (HF-8040)	
Frequency range	1.6 to 30 MHz
Input impedance	50 ohms, vswr 1.3:1 maximum, 1.1:1 typical
Tuning time	3 seconds typical, 6 seconds maximum
Duty cycle	Continuous
Rf input power	1.26-kW pep and 1-kW average maximum
Tuning power	75 to 200 watts
CV-3116 Tone Converter	
Input impedance	600 ohms ±10% at center frequency ±50 Hz
Dc loop output	±60 volts, 20-mA polar (high level) or ±6-volt polar (low level)
Center frequency	1275 Hz
KY-798 Tone Keyer	
Dc loop input	Neutral 60 mA; input impedance 100 ohms ±5% Neutral 20 mA; input impedance 300 ohms ±5% Neutral 20 mA; input impedance 2500 ohms ±5% Polar 20 mA; input impedance 2500 ohms ±5% Polar ±6 volts; input impedance nominally 10 kilohms
Output impedance	600 ohms ±10% at the mark and space frequency
Center frequency	1275 Hz
MPC-1000T Rtty Terminal Unit	
Tone keyer output level	0 dB mW
Mark and space input channels	Continuously tunable over 300 to 3000 Hz
Data output	MIL-STD-188C (+6-V dc mark, -6-V dc space)
Audio input	600 ohms, isolated

Table 1-4. Equipment Required But Not Supplied

Nomenclature (if assigned)	Common name/title	Model/part no.	Manufacturer
Communications Terminal AN/UGC-74A(V)3	Teletypewriter (tty)		GFE
Telephone Set TA-312/PT	Field telephone		GFE
Telephone Set TA-838/TT	Field telephone		GFE
TSEC/KWX-11	Fixed plant adapter		GFE
TSEC/KW-7	Secure tty unit		GFE
	Signal generator	HP-8640B-001	Hewlett-Packard
	Transmission test set	HP-3551A	Hewlett-Packard
	Frequency counter	HP-5335A	Hewlett-Packard
	Rf voltmeter	92C	Boonton
	100:1 voltage divider	91-7C	Boonton
	T-adapter	91-16A	Boonton
	Oscilloscope	464 DM44	Tektronix
	Digital multimeter	8520A	Fluke
	Coaxial attenautor (6 dB)	8491A-006	Hewlett-Packard
	Rf attenuator	8329-300	Bird Electronics
AN/PSM-6	Volt-ohm-milliammeter (vom)		GFE
	Card extender set	TS-8010	Rockwell International
CG-2340 B/U	Test cable		Rockwell International
	Static control wrist strap	3M-2064	3M Co.
	Impedance-matching pad		Local manufacture (figure 5-7)
	Indicator removal tool	TEC 14188	TEC Inc.
	Illuminated switch removal tool	Dialco 306-0375	Digitronics
Telecommunications Terminal AN/UGC-129	Teletypewriter (tty)		GFE

Table 1-5. Related Publications

Publication number	Title
TO 31S1-2TSC60-201	Combined Operation, Maintenance, and Illustrated Parts Breakdown for Radio Receiver R-2222/TSC-60(V) (HF-8054A Receiver)
TO 31S1-2TSC60-211	Combined Operation, Maintenance, and Illustrated Parts Breakdown for Radio Transmitter T-1453/TSC-60(V) (HF-8014A Exciter)
TO 31S1-2TSC60-271	Combined Operation, Maintenance, and Illustrated Parts Breakdown for Bandpass Filter F-1531/TSC-60(V) (HF-8060 Preselector)
TO 31S1-2TSC60-181	Combined Operation, Maintenance, and Illustrated Parts Breakdown for Control-Monitor C-11070/TSC-60(V)
TM 11-5815-602-12	Operator's and Organizational Maintenance Manual: Terminal, Communications AN/UGC-75A(V)3
TM 11-5815-602-34	Direct Support and General Support Maintenance Manual for Terminal, Communications AN/UGC-74A(V)3
TM 11-5815-602-34P	Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Terminal, Communications AN/UGC-74A(V)3
TM 11-5815-602-20P	Organizational Maintenance Repair Parts and Special Tools Lists for Terminal, Communications AN/UGC-74A(V)3
TM 11-5805-650-12&P TO 31W2-2TT-11	Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists for Telephone Set TA-838/TT
TM 11-5805-650-34&P TO 31W2-2TT-12	Direct Support and General Support Maintenance Including Repair Parts and Special Tools List for Telephone Set TA-838/TT
TM 11-5805-201-12 TO 31W1-2PT-291	Operator and Organizational Maintenance Manual, Telephone Set TA-312/PT
TM 11-5805-201-20P	Organizational Maintenance Repair Parts and Special Tools List for Telephone Set TA-312/PT
TM 11-5805-201-34P	Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Telephone Set TA-312/PT
TO 31S1-2TSC60-311 TM 11-5895-1185-13-3	Operation and Maintenance Instructions with Illustrated Parts Breakdown for CU-2294/TSC-60(V) Antenna Coupler

Table 1-5. Related Publications-Continued

Publication number	Title
TO 31S1-2TSC60-301 TM 11-5895-1185-13-2	Operation and Maintenance Instructions for 1290 HF VFT System
TO 31S1-2TSC60-291 TM 11-5895-1185-13-1	Operation and Maintenance Instructions with Illustrated Parts Breakdown for AM-7163/TSC-60(V) Power Amplifier and PP-7830/TSC-60(V) Power Supply
TO 35C1-2-525-1	Operation and Maintenance Instructions for LCD-A Series Lambda Power Supply
TO 31S1-2TSC60-286WC-1	Preventive Maintenance Inspection Workcards for Communication Central AN/TSC-60(V)7
TB 11-5810-143-34/1	Direct Support and General Support Maintenance Repair Equipment Standard for Communication Security Equipment TSEC/KW-7
TB 11-5810-221-14-2	General Maintenance Information for Communication Security Equipment TSEC/KW-7
TM 11-5805-201-35 TO 31W1-2PT-292	Direct Support, General Support, and Depot Maintenance Manual (Including Repair Parts and Special Tools List): Telephone Set TA-312/PT
TO 35C1-2-525-1	Operation and Maintenance Manual for Lambda Power Supply
TM 5-4120-347-14	Operator's, Organizational, Direct Support and General Support Maintenance Manual for Air Conditioner, Horizontal, Compact, 9000 BTU/HR
TM 5-4120-347-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Air Conditioner, Horizontal, Compact, 9000 BTU/HR
TO 31W2-2T-102	Service, Circuit Diagrams, and Illustrated Parts Breakdown Technical Manual for Converter, Frequency Shift, CV-2453(P)/T, and Keyer, Frequency Shift, KY-664(P)/T
TO 00-25-234	General Shop Practice Requirements for the Repair, Maintenance and Test of Electronic Equipment

Table 1-6. Special Tools

Part number	Mfr code or name/address	Nomenclature	Use
TEC 14188		Indicator removal tool	To remove indicators from front panel of Control-Monitor C-11070/TSC-60(V) (373J-1)
Dialco 306-0375		Illuminated switch removal tool	To remove illuminated switches from front panel of Control Monitor C-11070/TSC-60(V) (373J-1)

Table 1-7. Test Equipment

Type designation	FMSC	Nomenclature	Use
HP-3551A	28480	Transmission test set	To provide audio tones for testing transmitter and receiver and tty modems.
HP-8640B-001	28480	Rf signal generator	To provide rf signals for testing receiver.
Boonton 92C	80058	Rf voltmeter	To measure voltage levels during preselector tests.
Boonton 91-16A	80058	T-adapter	To connect preselector input to rf voltmeter and dummy load simultaneously during testing.
Tektronix 464 DM 44-01	80009	Oscilloscope	To observe and measure parameters of electrical waveforms during testing of tty modems.
Boonton 91-7C	80058	100:1 Voltage divider	To measure voltage levels during preselector tests.
Fluke 8520A-010	89536	Digital multimeter	To measure voltage and resistance in various units of AN/TSC-60(V)7.

Table 1-7. Test Equipment-Continued

Type designation	FMSC	Nomenclature	Use
HP-5335A	28480	Frequency counter	To measure frequency in various units of AN/TSC-60(V)7.
Bird 8329-300		Rf attenuator	To terminate pa output during test.
TS-8010	13499	Card extender set	To extend HF-8014 exciter and HF-8054A receiver circuit cards during test.
HP-8491A-006	28480	6-dB attenuator	To provide 6-dB attenuation for signal input to receiver during test.
3M-2064	59242	Static control wrist strap	To control static electricity when handling ESDS devices in various units of AN/TSC-60(V)7.
AN/PSM-6		Volt-ohm-milliammeter	To measure signal levels during system testing.
HP-6216A		Dc power supply	To supply dc voltages for system testing.
Bird 430021		Thru-line wattmeter	To read output-power level of HF-8023 pa during testing.
Bird 2500H		Wattmeter element	To permit thru-line wattmeter to read up to 2500 W.
Bird 1000H		Wattmeter element	To permit thru-line wattmeter to read up to 1000 W.
Bird 250H		Wattmeter element	To permit thru-line wattmeter to read up to 250 W.

CHAPTER 2

INSTALLATION

Section I. LOGISTICS

2-1. SCOPE. This section contains information about receiving, transportability, loading and unloading, unpacking, housing and storage, and cable requirements of Communication Central AN/TSC-60(V)7.

2-2. RECEIVING DATA.

2-2.1. Packing List. Table 1-2 is a list of equipment supplied. Use this list as an equipment inventory.

2-2.2. Equipment Dimensions. The crated and uncrated dimensions of Communication Central AN/TSC-60(V)7 are the same; they are listed in table 1-1. Leading particulars of the AN/TSC-60(V)7 are also in table 1-1.

2-3. TRANSPORTABILITY. The AN/TSC-60(V)7 shelter can be moved by 1-¼-ton truck, rail, helicopter, ship, or cargo aircraft for rapid global deployment. The AN/TSC-60(V)7 shelter is intended to be permanently installed and secured on a 1-¼-ton truck.

CAUTION

Keep drain plug loose during air and rail transport. Refer to figure 1-3 for location of drain plug.

2-4. LOADING AND UNLOADING. Load and unload the AN/TSC-60(V)7 shelter using a hoist or crane connected to the lift slings (tiedown cables). Secure shelter to vehicle with tiedown cables; tighten turnbuckles hand tight, plus ½ turn.

CAUTION

Do not use a forklift or any other vehicle that could damage the shelter.

2-5. UNPACKING. Refer to Section II for the unpacking requirements.

2-6. HOUSING AND STORAGE. There are no special housing or storage requirements for the AN/TSC-60(V)7. Be sure that the storage environment meets the requirements listed in table 1-3.

CAUTION

When secure data equipment is installed in shelter, use approved procedures to maintain security.

2-7. CABLE REQUIREMENTS.

2-7.1. Internal Cabling. Interconnecting wiring cables between the equipment in Communications Central AN/TSC-60(V)7 are identified in Chapter 7.

2-7.2. External Cabling. The following paragraphs describe cabling requirements for local control operation, remote control operation, phone connections, and subscriber tty signaling.

2-7.2.1. Local Radio Control Operation. During local operation, the external cabling includes control and rf cables that connect to the antenna coupler and a power input cable that supplies shelter power. The control and rf cables are supplied with the system; the power input cable is not.

2-7.2.2. Remote Radio Control Operation. During remote control operation, the remote cables described in paragraph 2-7.4. must be built locally.

2-7.2.3. Phone Connections. Table 2-1 lists the phone connections.

2-7.2.4. Subscriber Tty Signaling Connections. Tables 2-2 through 2-5 list the subscriber tty signaling connections.

2-7.3. Cable Handling. Handle the internal and external cables carefully to prevent cuts or ruptures to the sheath and damage or contamination of connectors. Use the following measures during receiving, installation, operation, and maintenance.

a. Keep cables free of dirt, moisture, or other foreign material.

b. Keep connector protective covers in place during cable handling until the cable is connected. Install protective cover immediately upon disconnection.

c. Do not kink, twist, stretch, or sharply bend cables.

d. Unreel external cables smoothly and lay loosely over rough terrain. Protect cables from sharp rock edges and swampy areas.

WARNING

Personal injury can result from tripping over loose-lying cables. When necessary, cover external cables with steel or wooden overlays.

CAUTION

Cables can be damaged by personnel or vehicle traffic. Cover external cables with steel or wooden overlays when necessary.

e. Protect cables with steel or wooden overlays for personnel and vehicle crossings.

2-7.4. Remote Control and PA Cable Construction. The following paragraphs explain assembly of the remote control and pa cables.

2-7.4.1. Remote Control Cables. A remote power cable and remote control cable are required to extend Control-Monitor 373J-1 (A1A3A5) from the shelter for remote operation. These cables are not supplied with the system and must be fabricated to support remote operation. Paragraph 2-11.2.4 describes a remote radio control setup procedure. Table 2-6 lists the remote control cable pin connections, binding post connections, and wire functions. Refer to this table when building the cable. Use 22 AWG twisted-pair wire for the remote control cable, and perform the following steps when building it.

a. Determine length of cable. Maximum length should not exceed 0.4 km (1.4 mi) or approximately 381 m (1250 ft).

b. Cut wire to length, allowing for shrinkage when wire pairs are twisted (if twisted-pair wire is not used).

c. Assemble 11 twisted pairs, using 12 or more turns per foot.

d. Solder twisted pairs to connector P1. (Refer to table 2-6.)

e. Mark each wire on opposite end of P1 to indicate wire function and binding post number.

Table 2-1. Phone Connections

Binding post connection	Function
E89, E90	2W
E91, E92	4W XMT
E93, E94	4W RCV
E95, E96	GND

Table 2-2. Tty Transmit DC Input Connections

Binding post connection	Input channel
E73, E74	1
E75, E76	2
E77, E78	3
E79, E80	4
E81, E82	5
E83, E84	6
E85, E86	7
E87, E88	8

Table 2-3. Tty Receive DC Output Connections

Binding post connections	Output channel
E97, E98	1
E99, E100	2
E101, E102	3
E103, E104	4
E105, E106	5
E107, E108	6
E109, E110	7
E111, E112	8

Table 2-4. Tty Converter Audio Input Connections

Binding post connections	Input channel
E49, E50	1
E51, E52	2
E53, E54	3
E55, E56	4
E57, E58	5
E59, E60	6
E61, E62	7
E63, E64	8
E64, E66	9

NOTE

Input channel 9 is for the shelter tty.

Table 2-5. Tty Keyer Audio Output Connections

Binding post connections	Output channel
E25, E26	1
E27, E28	2
E29, E30	3
E31, E32	4
E33, E34	5
E35, E36	6
E37, E38	7
E39, E40	8
E41, E42	9

NOTE

Output channel 9 is for the shelter tty.

Table 2-6. Remote Control Cable Pin Connections

P1 pin connection	Binding post connection	Function
G	E1	B2 XMT
H	E2	B2 XMT
P	E3	B2 RCV
Q	E4	B2 RCV
E	E5	B1 XMT
F	E6	B1 XMT
N	E7	B1 RCV
O	E8	B1 RCV
C	E9	A1 XMT
D	E10	A1 XMT
L	E11	A1 RCV
M	E12	A1 RCV
A	E13	A2 XMT
B	E14	A2 XMT
J	E15	A2 RCV
K	E16	A2 RCV
X	E17	KEY
D	E19	RADIO CNTL
C	E20	RADIO CNTL
g	E21	RADIO MON
f	E22	RADIO MON
w	E23	GND (radio 2 disable)

2-7.4.2. Remote PA Cables. The remote pa cables include an rf coaxial cable and a signal cable. Paragraph 2-11.2.3 describes the remote pa setup procedure. Table 2-7 lists the remote pa terminal connections, binding post connections, and wire functions. Refer to this table when building the cable.

Table 2-7. Remote PA Signal Cable Connections

Remote terminal connection	Binding post connection	Function
TB1-8	E43	TUNE START
TB1-6	E44	KEY
TB1-9	E45	LV ENBL
TB1-10	E46	HV ENBL
TB1-4	E47	EXCTR TUNE
TB1-11	E48	L PWR
TB1-1	E67	PA FAULT
TB1-5	E68	SIDE TONE
TB1-13	E69	PA INTLK
TB1-12	E70	PA READY
TB2-13	E71	ALC
TB2-14	E72	TGC

Section II. INSTALLATION

2-8. SCOPE. This section contains instructions for installation of Communication Central AN/TSC-60(V)7.

2-9. SHELTER SETUP PROCEDURE.

2-9.1. Manpower Requirements. Two men are required to install Communication Central AN/TSC-60(V)7.

2-9.2. Unpacking. The shelter contains the equipment needed for installation. Refer to figure 1-3 and table 1-1 for the location of the equipment and a list of these items. Unpack the shelter and prepare it for receive and transmit antenna erection in the following manner.

a. Open door to shelter and remove two antenna bags connected to environmental control unit (ECU).

b. Place receive antenna bag near location of assembly.

c. Place transmit antenna kit near location of antenna site.

d. Release clips holding environmental control unit (ECU) cover in place on outside of shelter. Fold down support bracket to horizontal position and place support legs in brackets on side of shelter (see figure 1-1).

e. Remove operator chair from top of antenna coupler.

WARNING

The antenna coupler weighs about 35.3 kg (78 lb). Two men are required for handling. Handle with care to prevent personnel injury or damage to coupler.

f. Disconnect antenna coupler from floor of shelter and move it near the antenna site.

g. Disconnect cable reel from mount and move outside the shelter.

h. Press release clip on antenna storage bracket, slide inward, and remove from ECU support frame.

i. Release ECU support frame by pulling two release handles out and down; lock handles open by turning them inward while pulling down.

CAUTION

To prevent injury to fingers, do not place fingers behind the frame flange when pushing the ECU out to the extended position.

j. Push ECU out to the extended position. Turn locking handles outward and push up to engage locking holes. Then turn handles forward to lock ECU in position.

k. Remove ECU cable W023 from stowage bracket on shelter wall and connect to connector on ECU frame.

l. Remove grounding rods and sledgehammer from shelter door when needed. Refer to paragraph 2-9.4 for additional instructions.

m. Open the air exhaust and intake covers on the blower assembly and latch open.

2-9.3. Receive Whip Antenna Erection. The receive antenna components include a sectional antenna whip and an antenna bag, as shown in figure 2-1. Erect the receive whip antenna as follows:

a. Remove antenna whip and bag from shelter.

b. Remove antenna sections (2, figure 2-1) from antenna bag (1).

CAUTION

Do not use tools to tighten or loosen the antenna sections.

c. Assemble the antenna sections by screwing them together. Hand-tighten each section.

WARNING

Injury can result from falling off the top of the shelter. Be careful when attaching the assembled whip antenna to the shelter.

d. Take position on top of shelter.

e. While holding antenna erect, screw antenna into mating threaded stub.

f. Be sure receive antenna coax (cable W103) is connected to RECEIVE WHIP jack on radio patch-panel A1A2A4.

2-9.4. Transmit Whip Antenna Erection. The transmit antenna installation kit components are listed in table 2-8 and shown in figure 2-2. Erect the transmit whip antenna as follows: (Numbers in parentheses refer to the items listed in table 2-8 and shown in figure 2-2.)

a. Select an antenna site at least 30.5 m (100 ft) from shelter.

b. Remove transmit antenna whip (2) and components from shelter.

WARNING

The antenna coupler weighs about 35.3 kg (78 lb). Two men are required for handling. Handle with care to prevent personnel injury or damage to coupler.

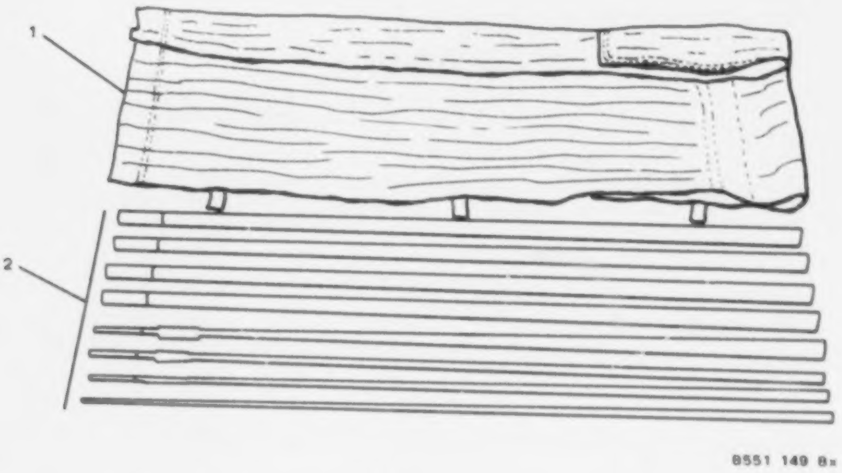


Figure 2-1. Receive Whip Antenna, Component Identification

Table 2-8. Transmit Antenna Installation Kit, Component Identification

Item	Qty	Description	Part no.
1	1	Bag, antenna	547-1137-005
2	1	Antenna, whip	013-1560-020
3	1	Insulator bushing	547-1244-002
4	3	Rope, guy	015-1211-000
5	3	Stake, guy	793-5986-002
6	1	Plate, guy	547-1243-002

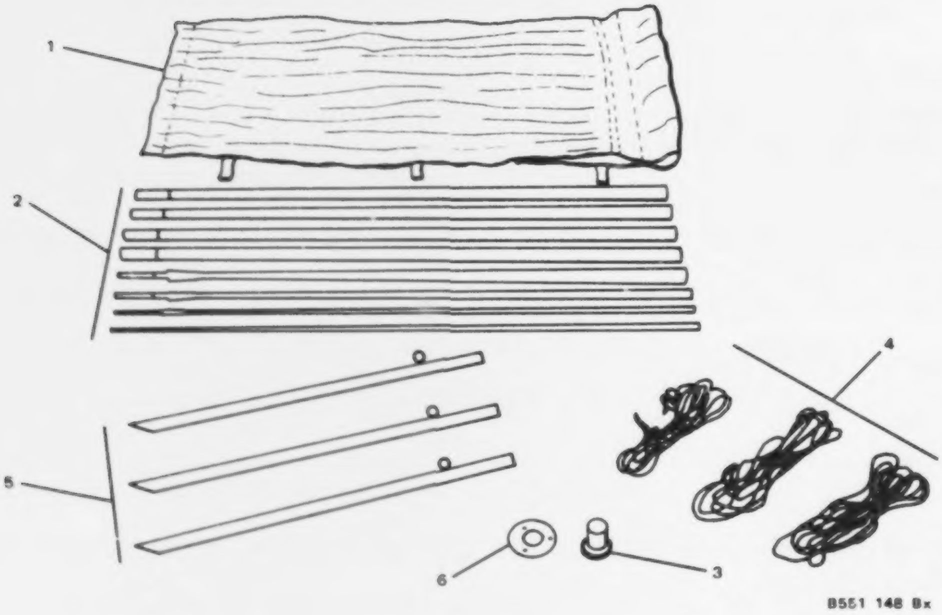


Figure 2-2. Transmit Whip Antennna, Component Identification

c. Locate antenna coupler precisely at selected antenna site.

d. Install ground rods as follows:

  (1) Remove ground rods from beside shelter door. Remove sledgehammer from shelter door.

  (2) Use the sledgehammer and drive one ground rod into ground near the shelter power entry panel and one ground rod into ground near antenna coupler.

  (3) Connect grounding cables to shelter and antenna coupler grounding studs.

e. Refer to figure 2-3 and assemble transmit antenna at site location as follows:

  (1) Use the sledgehammer and drive the three guy stakes (5) into the ground at positions indicated in figure 2-3. Dimension A on figure 2-3 is about 4.9 m (16 ft), and dimension B is about 8.5 m (28 ft). Drive the guy stakes deep enough to support the antenna; this depth varies with the type of soil. Normally, the guy stakes protrude about 152.4 mm (6 in.).

CAUTION

Do not use tools to tighten or loosen the antenna sections.

  (2) Assemble the antenna whip sections (2) by screwing them together. Hand-tighten each section.

  (3) Slide the insulator bushing (3) over the top end of the assembled antenna whip and move it toward the lower end until it seats firmly.

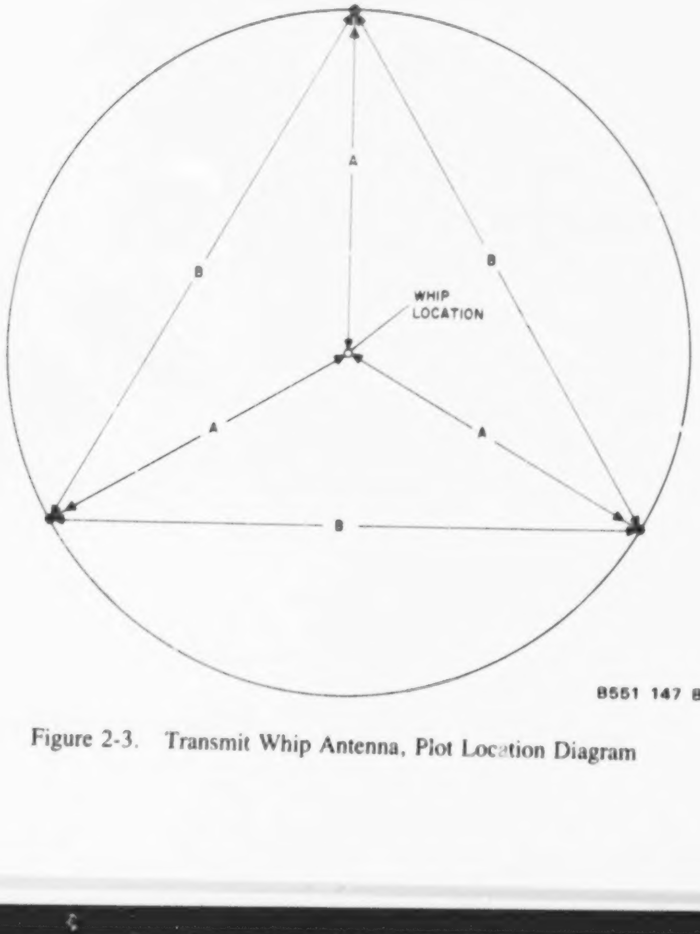


Figure 2-3. Transmit Whip Antenna, Plot Location Diagram

(4) Install the guy plate (6) over the insulator bushing.

(5) Attach the three guy ropes (4) to the guy plate using the nonadjusting end of the guy ropes. Uncoil the ropes and ensure that they are not damaged or knotted.

(6) Raise the assembled whip antenna and screw the bottom end to the threaded stub on antenna coupler.

(7) With the antenna erect, connect the guy stakes by snapping the hooks on the guy ropes into the eyes of the guy stakes.

(8) With the antenna erect, tighten the guy ropes to a moderate tension.

(9) Stand a short distance away and visually check that the antenna is erect. Adjust the guy ropes as required to straighten the antenna.

f. Connect antenna coupler control cable from ANT COUPLER jack J1 on shelter signal entry panel to INPUT jack J1 on antenna coupler.

g. Connect rf coaxial cable between TRANSMIT ANTENNA jack J7 on shelter signal entry panel to RF INPUT jack J2 on antenna coupler.

2-9.5. Primary Power Application. Apply power to the shelter as follows:

a. Be sure that all circuit breakers at power distribution panel A2A1 are off (out).

b. Be sure that power is off and that the power entry cable is available for connection to the shelter.

WARNING

Do not connect primary power cable to shelter when power is present at mating points. Death on contact may result if personnel fail to observe precautions. Remove power from source end before mating primary power cable to shelter input jack. Observe correct phase rotation.

c. Verify that power source is either 50/60 Hz or 400 Hz, as indicated on power entry panel.

d. Connect primary power cable connector to shelter power entry panel A2A6 jack J1.

2-9.6. TSEC/KW-7 (A2A2 and A2A3). Initial installation of each TSEC/KW-7 is done as follows.

WARNING

The TSEC/KW-7 (A2A2 and A2A3) weighs about 33.6 kg (74 lb). Two men are required for installation. Handle with care to prevent personnel injury or damage to unit.

a. Lift TSEC/KW-7 and slide into location A2A2 or A2A3, allowing for access to rear of unit from right side of rack.

b. Ensure that KW-7/KWX-11 circuit breaker CB10 is out (off).

c. Connect power cable W005 or W006 to J1 of TSEC/KW-7.

d. Secure TSEC/KW-7 in rack.

e. Set KW-7/DWX-11 circuit breaker CB10 in (on).

Section III. PREPARATION FOR USE

2-10. SCOPE. This section contains the initial setup instructions required to make Communications Central AN/TSC-60(V)7 operational. Additional setup instructions are in chapter 3.

2-11. INITIAL EQUIPMENT SETUP.

2-11.1. Equipment Strapping. The following paragraphs contain strapping information for the equipment in Communications Central AN/TSC-60(V)7. Check the equipment to ensure that straps are connected as outlined in the following paragraphs. Refer to the related publications listed in table 1-5 for location of strapping points in the individual equipment.

2-11.1.1. FSK 1290 Modem A1A2A1. The following cards require strapping.

2-11.1.1.1. Power Supply Card A18. Strap power supply card A18 for 115-volt operation.

2-11.1.1.2. Composite Card A17. Table 2-9 contains strapping data for composite card A17.

2-11.1.1.3. Modulator Cards A2, 4, 6, 8, 10, 12, 14, 16. Table 2-10 contains strapping data for the modulator cards.

2-11.1.1.4. Demodulator Cards A1, 3, 5, 7, 9, 11, 13, 15. Table 2-11 contains strapping data for the demodulator cards.

2-11.1.2. High-Level Interface A1A1A1. Strap each of the four dual-duplex terminator boards (A1, A2, A3, A4) as follows:

a. Remove straps 1, 4, 12, 14, 17, 19, 21, 22, 23, 24, 34, 36 40, 42, 44, and 45, if installed.

b. Connect straps 2, 11, 13, 15, 16, 25, 35, 37, 38, 39, 41, and 43.

2-11.1.3. Model TC-301F Converters. Strap each of the converters for low level (internal voltage) as follows.

a. Remove straps from 8 to 5, 8 to 7, 35 to 34, and 35 to 32, if installed.

b. Connect straps from 8 to 6 and from 35 to 33.

2-11.1.4. Model TK-201F Keyers. Strap each of the keyers for polar low level, ±6 volts, as follows.

a. Strap 6 to 7.

b. Remove all other straps, if installed.

c. Verify that low-frequency crystal is installed as Y1.

d. Verify that high-frequency crystal is installed as Y2.

2-11.1.5. Model M106A-1 Power Supply A1A1A9. Strap the model M106A-1 power supply as follows:

a. Set input power slide switch for 115-volt input.

b. Set solderless connections on T1 for 60 volts.

c. Set barrier strip shorting bar (TB5) for 60 volts.

Table 2-9. Composite Card A17 Strapping

Function	Strapping instructions
Input	Connect jumper (solder drops) at M and at N.
Output	Connect jumper (solder drop) at P. Connect O/P strap to P. Connect Q/R strap to R.
Clock	a. Connect K/L strap to L. b. Set S1 as follows:

Position	Setting
1	ON
2	ON
4	ON
8	ON
16	ON
32	ON
64	OFF
128	ON
256	OFF
512	ON

NOTE

The above settings for S1 give a clock frequency of 12.8 kHz. To determine strapping required for a different clock frequency, divide the clock frequency by 40. The resulting number is the binary code for the positions on S1 (On = 0, Off = 1). (Example: 12.8k/40 = 320. 320 = 64 + 256.) The recommended clock frequency is 12.8 kHz.

Table 2-10. Modulator Cards A2, 4, 6, 8, 10, 12, 14, 16 Strapping

Function	Strapping instructions
Center frequency programming	Set S4 and S5 on modulator cards to following.

NOTE

Switch set to OFF corresponds with a binary 1; switch set to ON corresponds with a binary 0.

Set switches to equal binary equivalent of (Tx + IF) ÷ 2.5, where Tx is desired center frequency and IF is intermediate frequency of modulator.

			LSB											MSB
Card	Center frequency	Ref	A	B	C	D	E	F	G	H	I	J	K	L
A2	425	1602	0	1	0	0	0	0	1	0	0	1	1	0
A4	765	1742	0	1	1	1	0	0	1	1	0	1	1	0
A6	1105	1874	0	1	0	0	1	0	1	0	1	1	1	0
A8	1445	2010	0	1	0	1	1	0	1	1	1	1	1	0
A10	1785	2146	0	1	0	0	0	1	1	0	0	0	0	1
A12	2125	2282	0	1	0	1	0	1	1	1	0	0	0	1
A14	2465	2418	0	1	0	0	1	1	1	0	1	0	0	1
A16	2805	2554	0	1	0	1	1	1	1	1	1	0	0	1

NOTE

The intermediate frequency, based on 85-Hz shift kit, is 3580 Hz.

Function	Strapping instructions
Input interface	a. Disconnect MIL-188 strap. b. Disconnect TT1 and H straps, if connected.
Mute, mark/space hold	a. Connect NO MUTE and 0.8-second straps. b. Disconnect HOLD, M/S HOLD, and all other second straps, if connected.
On/off keying	Disconnect 00KA and 00KB straps, if connected.
Wide shift	a. Connect C strap. b. Disconnect A and B straps, if connected.

Table 2-11. Demodulator Cards A1, 3, 5, 7

Function	Strapping instructions
Center frequency programming	Set S5 and S6 on demodulator cards to following.

NOTE

Switch set to OFF corresponds with a binary 1; switch set to ON corresponds with a binary 0.

Set switches to equal binary equivalent of (Tx and IF) ÷ 2.5, where Tx is desired center frequency and IF is intermediate frequency of demodulator.

			LSB											MSB .
Card	Center frequency	Ref	A	B	C	D	E	F	G	H	I	J	K	L
A1	425	1594	0	1	0	1	1	1	0	0	0	1	1	0
A3	765	1730	0	1	0	0	0	0	1	1	0	1	1	0
A5	1105	1866	0	1	0	1	0	0	1	0	1	1	1	0
A7	1445	2002	0	1	0	0	1	0	1	1	1	1	1	0
A9	1785	2138	0	1	0	1	1	0	1	0	0	0	0	1
A11	2125	2274	0	1	0	0	0	1	1	1	0	0	0	1
A13	2465	2410	0	1	0	1	0	1	1	0	1	0	0	1
A15	2805	2546	0	1	0	0	1	1	1	1	1	0	0	1

NOTE

The intermediate frequency, based on 85-Hz shift kit, is 3560 Hz.

Function	Strapping instructions
Diversity	Disconnect Y and Z strap, if connected.

2-11.1.6. HF-8014A Exciter A1A2A2. Strap the two transmit audio cards in the exciter as follows:

a. On audio transmit cards, be sure that straps are removed from between terminals 5 and 6, and 7 and 8. Straps can be stowed on cards by connecting to one of the terminal pins.

2-11.2. Secure Data Equipment. Install the secure data equipment as described in the following paragraphs.

2-11.2.1. AC Power Hookup. Connect ac power as follows.

a. Drill a hole in back of KWX-11 chassis, as marked, behind TB2.

NOTE

Hole location marking is directly behind terminal board TB2.

b. Connect supplied insulator clamp to ac cable W009 and insert through chassis.

c. Route cable W009 and connect wires to TB2 as marked.

2-11.2.2. DC Power Hookup. Connect dc power as follows.

a. Drill two holes in back of KWX-11 chassis, as marked, behind TB1 and TB4.

NOTE

The hole location marks are directly behind terminal boards TB1 and TB4.

b. Connect supplied feedthrough connectors to chassis.

c. Route cable W007 through connector to TB1.

d. Connect wires to TB1, as marked.

e. Route cable W003 through connector to TB4.

f. Connect wires to TB4, as marked.

2-11.2.3. Mounting. Use shims supplied with unit as needed, and mount into rack.

2-11.3. Local and Remote Connections. The following paragraphs contain instructions for initial setup of local and remote pa and control.

2-11.3.1. Local PA Setup. Perform the following procedure to set up for local pa operation.

a. At power distribution panel A2A1, perform the following:

  (1) Set EXTR/PRESELECTOR circuit breaker CB7 to OFF.

  (2) If POWER AMPLIFIER circuit breaker CB3 is ON, set to OFF.

b. At radio patch-panel A1A2A4, perform the following.

  (1) Remove cable W236 from REMOTE PA jack J6 and plug into LOCAL PA jack J5.

  (2) Remove rf cable W102 from REMOTE ANTENNA jack J3 and plug into LOCAL PA/RF jack J1.

c. At power distribution panel A2A1, set circuit breakers CB3 and CB7 to ON.

2-11.3.2. Local Radio Control Setup. Set up for local control as follows:

a. Set CONT/RCVR/PRESELECTOR circuit breaker CB6 on power distribution panel to OFF.

b. Place control-monitor in location A1A3A5 and connect two connectors on rear panel.

c. Slide control-monitor into slot and tighten four captive screws to secure unit.

d. Set CONT/RCVR/PRESELECTOR circuit breaker CB6 on power distribution panel to ON.

2-11.3.3. Remote PA Setup. Set up for remote pa operation as follows. Figure 2-4 is the remote pa setup block diagram.

a. At power distribution panel A2A1, perform the following:

  (1) Set EXTR/PRESELECTOR circuit breaker CB7 to OFF.

  (2) Set POWER AMPLIFIER circuit breaker CB3 to OFF.

b. At radio patch-panel A1A2A4, perform the following:

  (1) Move cable W236 from LOCAL PA jack J5 to REMOTE PA jack J6.

  (2) Move rf cable W102 from LOCAL PA/RF jack J1 to REMOTE ANTENNA jack J3.

c. Connect external remote pa signal cable from signal entry panel A3 to remote pa. Table 2-7 lists the signal entry panel terminals and functions.

d. Connect external pa rf coaxial cable from signal entry panel A3 to remote pa.

e. Set EXCTR/PRESELECTOR circuit breaker CB7 to ON.

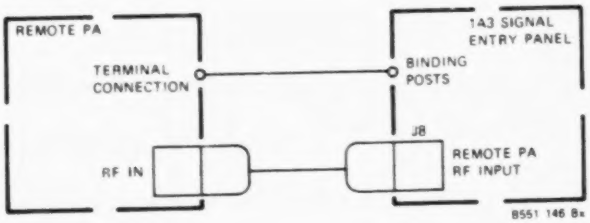


Figure 2-4. Remote PA Setup, Block Diagram

2-11.3.4. Remote Radio Control Setup. Set up for remote control as follows. Figure 2-5 is the remote control setup block diagram.

a. Set CONT/RCVR/PRESELECTOR circuit breaker CB6 on power distribution panel to OFF.

b. Loosen four captive screws that secure control-monitor A1A3A5 to console.

c. Slide control-monitor forward and disconnect two connectors on rear panel.

d. Remove control-monitor from console and install at remote site.

e. Connect remote control cable to control-monitor rear panel connector J1 and binding posts on signal entry panel. Table 2-6 lists the binding post connections.

f. Connect power input cable to control monitor rear panel connector J2.

g. Set CONT/RCVR/PRESELECTOR circuit breaker CB6 on power distribution panel to ON.

2-11.4. Tty Shelf Setup. Pull out and step up the tty shelf as follows:

NOTE

To allow complete extension of the tty shelf, be sure the cables at the rear of the tty move freely without binding.

a. On front of shelf, release and hold two latches (slide inward) while pulling shelf outward from equipment rack.

b. Fold down shelf extensions and insert supports into brackets on shelter wall ledges.

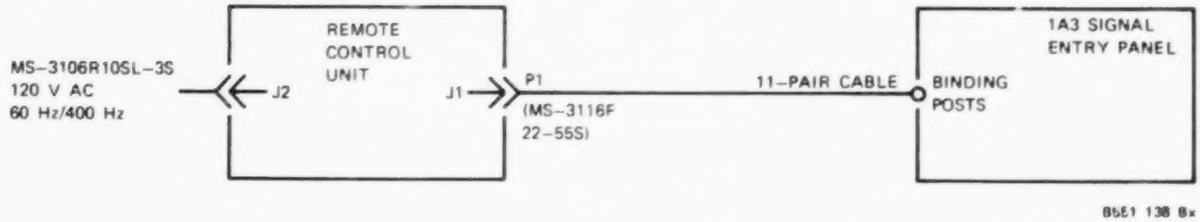

MS-3106R10SL-3S
120 V AC
60 Hz/400 Hz
J2
REMOTE
CONTROL
UNIT
J1
P1
(MS-3116F
22-55S)
11-PAIR CABLE
BINDING
POSTS
1A3 SIGNAL
ENTRY PANEL
B6E1 138 Bx

Figure 2-5. Remote Control Setup, Block Diagram

Section IV. PREPARATION FOR RESHIPMENT

2-12. SCOPE. This section contains disassembly and storage instructions to prepare Communications Central AN/TSC-60(V)7 for reshipment.

2-13. DISASSEMBLY.

2-13.1. Equipment Shutdown. Shut down all equipment in shelter according to the stopping procedures in Chapter 3.

2-13.2. Primary Power Removal. Remove power from the shelter as follows:

a. Ensure that all circuit breakers at power distribution panel A2A1 are off (out).

b. Remove primary power at source.

WARNING

Do not disconnect primary power cable from shelter when power is present at mating points. Death on contact may result if personnel fail to observe precautions. Remove power from source and before disconnecting primary power cable from shelter input jack.

c. Disconnect primary power cable connector from shelter power entry panel A2A6 jack J1.

2-13.3. Transmit Whip Antenna Dismantling. Dismantle the transmit whip antenna in the reverse order described in paragraph 2-9.4. Paragraph 2-14 describes packing and storage of antenna components.

2-13.4. Receive Whip Antenna Dismantling. Dismantle the receive whip antenna in the reverse order described in paragraph 2-9.3. Paragraph 2-14 describes antenna packing and storage.

2-13.5. Tty Shelf Storage. Push in and store the tty shelf as follows:

CAUTION

When pushing in the shelf, be sure the shelf does not bind or crimp the cables at the rear of the tty.

a. Fold up shelf extensions and supports; hold in place.

b. On front of shelf, slide inward and hold two latches while pushing shelf into equipment rack; be sure shelf extensions engage brackets on sides of equipment rack.

c. Release two shelf latches; be sure the latches lock in the equipment rack.

2-14. EQUIPMENT STORAGE.

2-14.1. Packing. Pack the receive and transmit antenna components into the antenna bags. Figure 2-1 shows the receive antenna components, figure 2-2 shows the transmit antenna installation kit.

2-14.2. Storage. After the antennas have been packed, store the equipment in the shelter as follows:

CAUTION

Ensure that the equipment in the shelter is secure. A loose piece of equipment can cause damage during transportation.

a. Secure sledgehammer on shelter door. Secure ground rods beside door.

b. Disconnect cable W023 from ECU frame connector; stow cable connector on stowage bracket on shelter wall.

c. Release ECU support frame by pulling two release handles out and down. Lock handles open by turning handles in while pulling down.

d. Grasp ECU frame by handles on each side of frame and pull ECU into shelter.

e. Turn ECU release handles outward and push up to engage locking holes. Turn handles in to lock ECU in place.

f. On outside of shelter, close ECU support door and lock in place.

g. Position and secure cable reel to mount.

WARNING

The antenna coupler weighs about 35.3 kg (78 lb). Handle with care to prevent personnel injury or damage to the coupler.

h. Move and secure antenna coupler to floor of shelter.

i. Place operator chair on top of antenna coupler and secure.

j. Mount antenna storage bracket on ECU frame.

k. Place antenna bags in stowage position and secure with straps at top and bottom of bags.

l. Close air exhaust and intake covers on blower assembly.

m. Close and secure shelter door.

CHAPTER 3

OPERATION

Section I. CONTROLS AND INDICATORS

3-1. SCOPE. This section describes the functions of controls, indicators, and jacks on AN/TSC-60(V)7 equipment, and lists the general operating order of the equipment as discussed in section II. For descriptions of equipment not listed in this section, refer to the related technical manual (table 1-5, Related Publications).

3-2. POWER ENTRY PANEL A2A6. Power entry panel A2A6 (figure 3-1) connects the primary power source cables to the shelter power circuits. The panel has two utility outlets that supply shelter power to equipment outside the shelter. Table 3-1 lists the panel's controls and its functions.

3-3. POWER DISTRIBUTION PANEL ASSEMBLY A2A1. The assembly (figure 3-2) consists of a power distribution panel, a main power panel, and a frame-mounted LIGHTS switch. The panels contain circuit breakers and switches that apply and control shelter power. Table 3-2 lists the assembly's controls and their functions.

3-4. AUDIO JACKFIELD A1A1A2. Audio jackfield A1A1A2 (figure 3-3) contains 144 jacks arranged in three horizontal rows of 48 jacks each. The rows are labeled LINE, EQPT (equipment), and MON (monitor). The jacks are functionally grouped in vertical columns. Each LINE jack is normalled-through to the EQPT jack below it; each MON jack is wired in parallel with the LINE jack above it. The jack groups are numbered J1 through J48, from left to right. Table 3-3 lists the function of each jack.

3-5. DC JACKFIELD A1A1A3. Dc jackfield A1A1A3 (figure 3-4) has the same jack arrangement as audio jackfield A1A1A2. Table 3-4 lists the function of each jack on the dc jackfield.

3-6. VOLTMETER PANEL A1A1A4. Voltmeter panel A1A1A4 (figure 3-5) contains a dc voltmeter for measuring tty signal levels. The front-panel INPUT jack connects a patchcord to the meter; the jack tip goes to the positive terminal and the jack ring goes to the negative terminal of the meter.

3-7. SECURE PATCH-PANEL A1A1A7. Secure patch-panel A1A1A7 (figure 3-6) contains a bypass plug and connectors that connect tty signals to secure equipment or bypass the secure equipment. Table 3-5 lists the functions of connectors, meters, and jacks on the panel.

3-8. RADIO PATCH-PANEL A1A2A4. Radio patch-panel A1A2A4 (figure 3-7) contains connectors that allow patching rf signals between receiving/transmitting equipment and external antennas. Table 3-6 lists the functions of these connectors.

3-9. BLOWER FAN ASSEMBLY A5. Blower fan assembly A5 (figure 3-8) contains controls that direct exhaust air flow from the shelter and recirculate heated air through the shelter. Table 3-7 lists the functions of these controls.

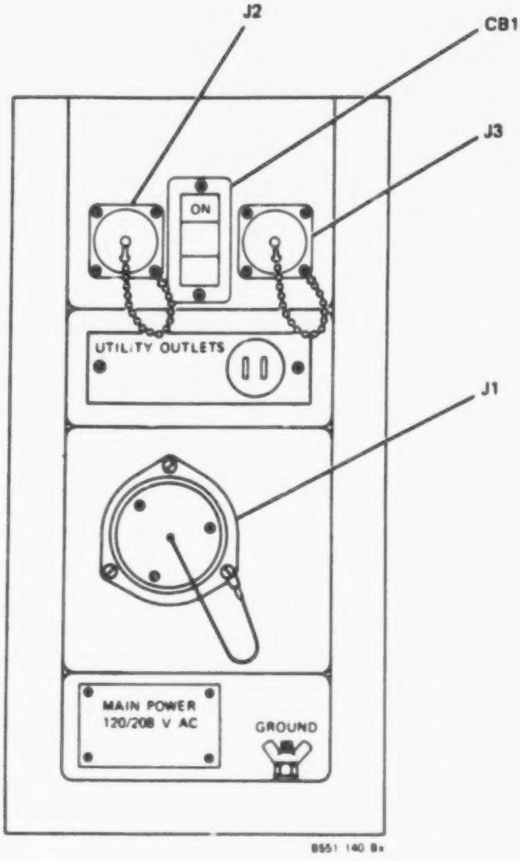

J2
CB1
J3
ON
UTILITY OUTLETS
J1
MAIN POWER
120/208 V AC
GROUND
8551 140 Bx

Figure 3-1. Power Entry Panel A2A6

Table 3-1. Power Entry Panel A2A6, Controls and Jacks

Name	Reference designation	Function
Circuit breaker	CB1	Applies 120-volt ac (phase A) power to UTILITY OUTLETS jack J2 and J3.
MAIN POWER jack	J1	Accepts 120/208-volt ac, 3-phase, 4-wire, 50/60- or 400-Hz primary power.
UTILITY OUTLETS jacks	J2, J3	Connects 120-volt ac (phase A) power to equipment outside the shelter.

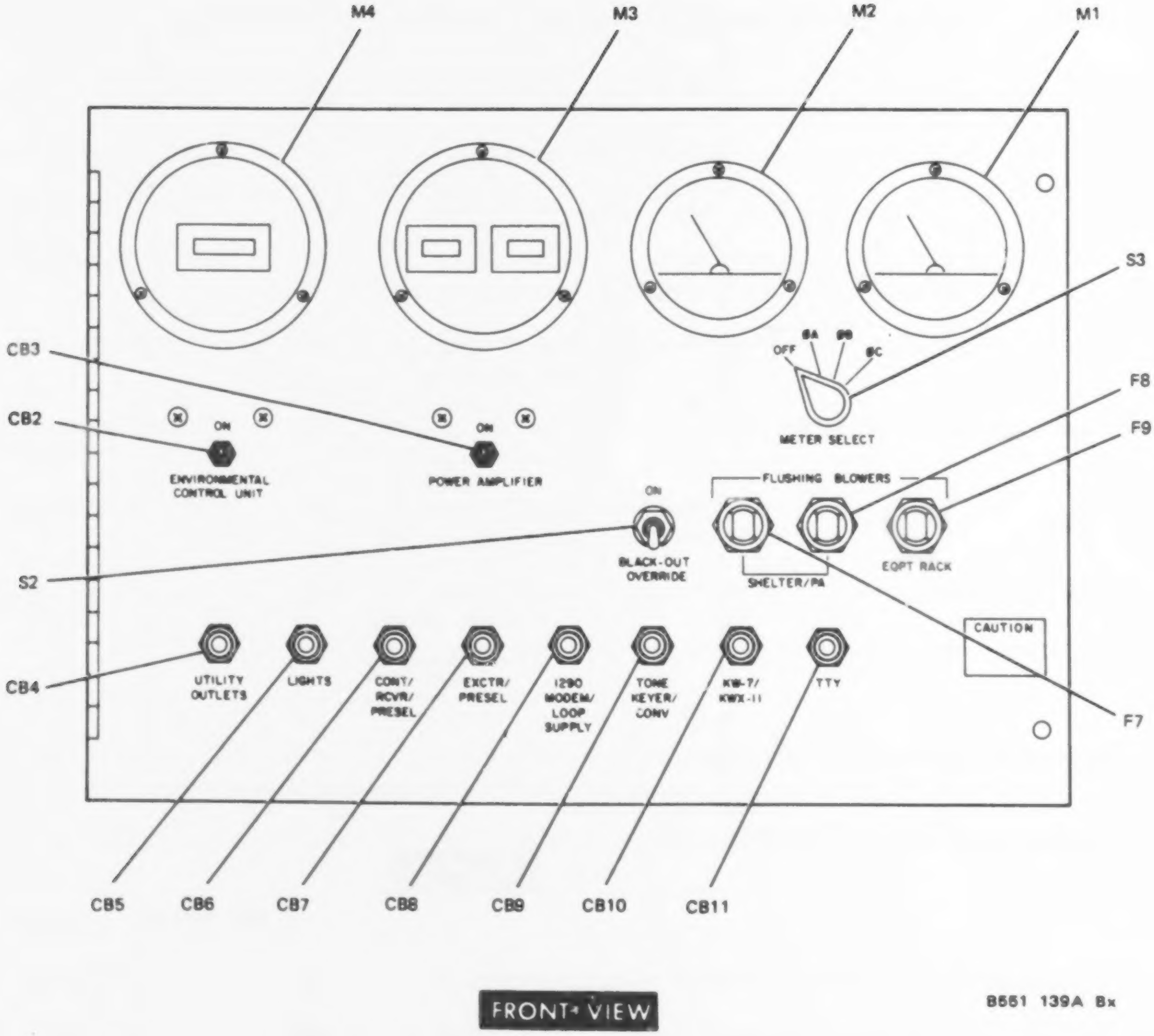

M4
M3
M2
M1
S3
OFF
ØA
ØB
ØC
METER SELECT
CB3
CB2
ON
ENVIRONMENTAL CONTROL UNIT
ON
POWER AMPLIFIER
F8
F9
FLUSHING BLOWERS
ON
BLACK-OUT OVERRIDE
SHELTER/PA
EQPT RACK
S2
CAUTION
CB4
UTILITY OUTLETS
LIGHTS
CONT/ RCVR/ PRESEL
EXCTR/ PRESEL
1290 MODEM/ LOOP SUPPLY
TONE KEYER/ CONV
KW-7/ KWX-11
TTY
F7
CB5
CB6
CB7
CB8
CB9
CB10
CB11
FRONT VIEW
B551 139A Bx

Figure 3-2. Power Distribution Panel Assembly A2A1 (Sheet 1 of 2)

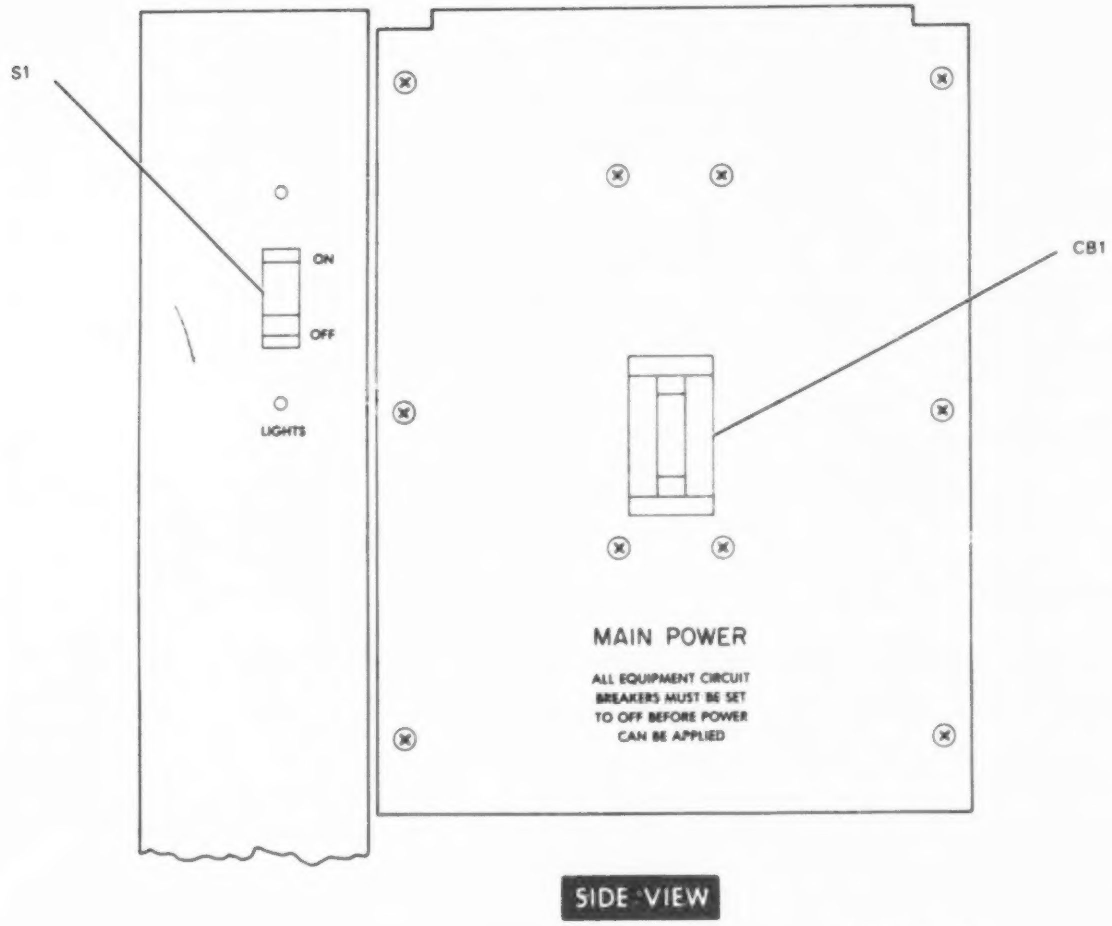

S1
ON
OFF
LIGHTS
CB1
MAIN POWER
ALL EQUIPMENT CIRCUIT BREAKERS MUST BE SET TO OFF BEFORE POWER CAN BE APPLIED
SIDE VIEW
B551 1398 Bx

Figure 3-2. Power Distribution Panel Assembly A2A1 (Sheet 2 of 2)

Table 3-2. Power Distribution Panel Assembly A2A1, Controls and Indicators

Name	Reference designation	Function
Circuit breakers:		
MAIN POWER	CB1	Applies 3-phase main power to circuit breakers CB2 through CB11 and fuses F7 through F9. Over/undervoltage monitor circuits can automatically trip CB1.
ENVIRONMENTAL CONTROL UNIT	CB2	Applies 3-phase power to environmental control unit A4.
POWER AMPLIFIER	CB3	Applies 3-phase power to HF-8032 power supply A1A4A2.
UTILITY OUTLETS	CB4	Applies phase B power to utility outlets inside shelter.
LIGHTS	CB5	Applies phase C power to shelter lighting circuits.
CONT/RCVR/PRESEL	CB6	Applies phase A power to HF-8054A receiver A1A3A3, HF-8060 preselector A1A3A9, and 3735-1 control-monitor A1A3A5.
EXCTR/PRESEL	CB7	Applies phase C power to HF-8014A exciter A1A2A2 and HF-8060 preselector A1A3A7.
1290 MODEM/LOOP SUPPLY	CB8	Applies phase A power to 1290 FSK modem 1A12A1 and 106A-1 loop PS A1A1A9.
TONE KEYER/CONV	CB9	Applies phase B power to MPC-1000T/LCO FSK modem A1A3A1 and tone converter/keyers A1A1A5 and A1A1A6.
KW-7/KWX-11	CB10	Applies phase A power to TSEC/KWX-11 A2A4, and TSEC/KW-7 A2A3.
TTY	CB11	Applies phase C power to AN/UGC-74(V)3 teletypewriter A1A2A3.
Fuses:		
SHELTER/PA	F7, F8	Protect A5 blower/duct assembly circuits against overload and light when fuse is blown.
EQPT RACK	F9	Protects equipment cabinet blower A1 circuit against overload and lights when fuse is blown.
Switches:		
LIGHTS	S1	Switches phase C power to BLACK-OUT OVERRIDE switch S2.
BLACK-OUT OVERRIDE	S2	At BLACK-OUT OVERRIDE, overrides blackout door switch A2A7S1 and applies phase C power from LIGHTS switch S1 to shelter main lighting circuit. At ON, applies power to blackout door switch.

Table 3-2. Power Distribution Panel Assembly A2A1, Controls and Indicators-Continued

Name	Reference designation	Function
METER SELECT	S3	Selects phase A, phase B, or phase C line current and voltage for AC AMPERES meter M1 and AC VOLTS meter M2, respectively.
Meters:		
AC AMPERES	M1	Indicates line current selected by METER SELECT switch S3.
AC VOLTS	M2	Indicates line voltage selected by METER SELECT switch S3.
50/60-Hz frequency meter	M3	Indicates frequency of selected line voltage, from 48 to 52 Hz and from 58 to 62 Hz.
400-Hz frequency meter	M4	Indicates frequency of selected line voltage, from 380 to 420 Hz.

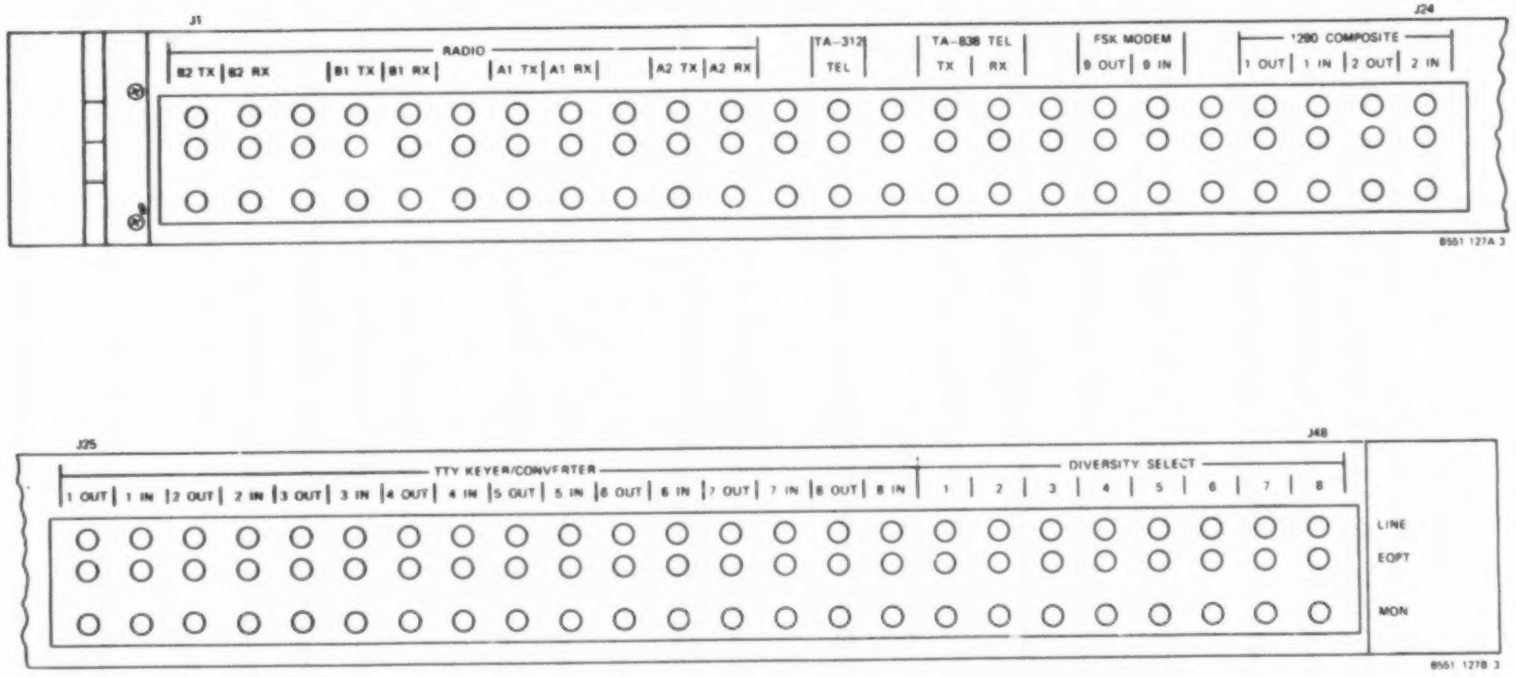

J1
J24
RADIO
B2 TX
B2 RX
B1 TX
B1 RX
A1 TX
A1 RX
A2 TX
A2 RX
TA-312
TEL
TA-838 TEL
TX
RX
FSK MODEM
9 OUT
9 IN
1290 COMPOSITE
1 OUT
1 IN
2 OUT
2 IN
B551 127A 3
J25
J48
TTY KEYER/CONVERTER
1 OUT
1 IN
2 OUT
2 IN
3 OUT
3 IN
4 OUT
4 IN
5 OUT
5 IN
6 OUT
6 IN
7 OUT
7 IN
8 OUT
8 IN
DIVERSITY SELECT
1
2
3
4
5
6
7
8
LINE
EQPT
MON
B551 127B 3

Figure 3-3. Audio Jackfield A1A1A2

Table 3-3. Audio Jackfield A1A1A2, Jack Identification

Jack	Function
J1	
LINE	Permits patching from RADIO B2 XMT binding posts on signal entry panel A3 and from channel B2 transmit output line of control-monitor A1A3A5. (The two lines are parallel circuits.)
EQPT	Permits patching into channel B2 transmit input line of exciter A1A2A2.
MON	Permits monitoring channel B2 transmit input signal from signal entry panel or from control-monitor.
J2	
LINE	Permits patching into RADIO B2 RCV binding posts on signal entry panel A3 and into channel B2 receive input line to control-monitor A1A3A5. (The two lines are parallel circuits.)
EQPT	Permits patching from channel B2 receive output line of receiver A1A3A3.
MON	Permits monitoring channel B2 receive input signal to signal entry panel or to control-monitor.
J3	Spare.
J4	Same as J1, but for channel B1.
J5	Same as J2, but for channel B1.
J6	Spare.
J37	Same as J1, but for channel A1.
J8	Same as J2, but for channel A1.
J9	Spare.
J10	Same as J1, but for channel A2.
J11	Same as J2, but for channel A2.
J12	Spare.
J13	
LINE	Permits patching into PHONE 2W binding posts on signal entry panel A3.
EQPT	Permits patching into 2-wire phone line to telephone set TA-312/PT.
MON	Permits monitoring 2-wire telephone line signal at signal entry panel.
J14	Spare.
J15	
LINE	Permits patching into PHONE 4W XMT (subscriber input) binding posts on signal entry panel A3.
EQPT	Permits patching from 4-wire transmit output of telephone set TA-838/TT.

Table 3-3. Audio Jackfield A1A1A2, Jack Identification-Continued

Jack	Function
MON	Permits monitoring 4-wire telephone transmit signal to signal entry panel.
J16	
LINE	Permits patching from PHONE 4W RCV (subscriber output) binding posts on signal entry panel A3.
EQPT	Permits patching into 4-wire receive input of telephone set TA-838/TT.
MON	Permits monitoring 4-wire receive signal from signal entry panel.
J17	Spare.
J18	
LINE	Permits patching into channel 9 subscriber FSK input line to TTY KEYER (AUDIO OUTPUT) 9 binding posts on signal entry panel A3.
EQPT	Permits patching from FSK output of FSK modem A1A3A1.
MON	Permits monitoring FSK signal at TTY KEYER (AUDIO OUTPUT) 9 binding posts on signal entry panel A3.
J19	
LINE	Permits patching from channel 9 subscriber FSK output line at TTY CONVERTER (AUDIO INPUT) 9 binding posts on signal entry panel A3.
EQPT	Permits patching into audio input of FSK modem A1A3A1.
MON	Permits monitoring FSK input signal at TTY CONVERTER (AUDIO INPUT) 9 binding posts on signal entry panel.
J20	Spare.
J21	
LINE	Permits patching from composite 1 output of 1290 FSK modem A1A2A1.
EQPT	Not connected.
MON	Permits monitoring composite 1 output of 1290 FSK modem A1A2A1.
J22	
LINE	Permits patching into composite 1 input of 1290 FSK modem A1A2A1.
EQPT	Not connected.
MON	Permits monitoring composite 1 input of 1290 FSK modem A1A2A1.
J23	Same as J21, but for composite 2.
J24	Same as J22, but for composite 2.

Table 3-3. Audio Jackfield A1A1A2, Jack Identification-Continued

Jack	Function
J25	
LINE	Permits patching into TTY KEYER (AUDIO OUTPUT) 1 binding posts on signal entry panel.
EQPT	Permits patching from channel 1 keyer output of tone keyer/converter A1A1A5.
MON	Permits monitoring channel 1 keyer output signal at TTY KEYER (AUDIO OUTPUT) 1 binding posts on signal entry panel.
J26	
LINE	Permits patching from TTY CONVERTER (AUDIO INPUT) 1 binding posts on signal entry panel.
EQPT	Permits patching into channel 1 converter input of tone keyer/converter A1A1A5.
MON	Permits monitoring channel 1 audio signal at TTY CONVERTER (AUDIO IN) 1 binding posts on signal entry panel.
J27	Same as J25, but for channel 2.
J28	Same as J26, but for channel 2.
J29	Same as J25, but for channel 3.
J30	Same as J26, but for channel 3.
J31	Same as J25, but for channel 4.
J32	Same as J26, but for channel 4.
J33	
LINE	Permits patching into TTY KEYER (AUDIO OUTPUT) 5 binding posts on signal entry panel.
EQPT	Permits patching from channel 5 keyer output of tone keyer/converter A1A1A6.
MON	Permits monitoring channel 5 keyer output signal at TTY KEYER (AUDIO OUTPUT) 5 binding posts on signal entry panel.
J34	
LINE	Permits patching from TTY CONVERTER (AUDIO INPUT) 5 binding posts on signal entry panel.
EQPT	Permits patching into channel 5 converter input of tone keyer/converter A1A1A6.
MON	Permits monitoring channel 5 audio signal at TTY CONVERTER (AUDIO IN) 5 binding posts on signal entry panel.
J35	Same as J33, but for channel 6.
J36	Same as J34, but for channel 6.

Table 3-3. Audio Jackfield A1A1A2, Jack Identification-Continued

Jack	Function
J37	Same as J33, but for channel 7.
J38	Same as J34, but for channel 7.
J39	Same as J33, but for channel 8.
J40	Same as J34, but for channel 8.
J41	
LINE	Permits patching from channel 1 demodulator diversity output of 1290 FSK modem A1A2A1.
EQPT	Permits patching into channel 1 demodulator diversity input of 1290 FSK modem A1A2A1.
MON	Permits monitoring channel 1 demodulator diversity output of 1290 FSK modem A1A2A1.
J42	Same as J41, but for channel 2.
J43	Same as J41, but for channel 3.
J44	Same as J41, but for channel 4.
J45	Same as J41, but for channel 5.
J46	Same as J41, but for channel 6.
J47	Same as J41, but for channel 7.
J48	Same as J41, but for channel 8.

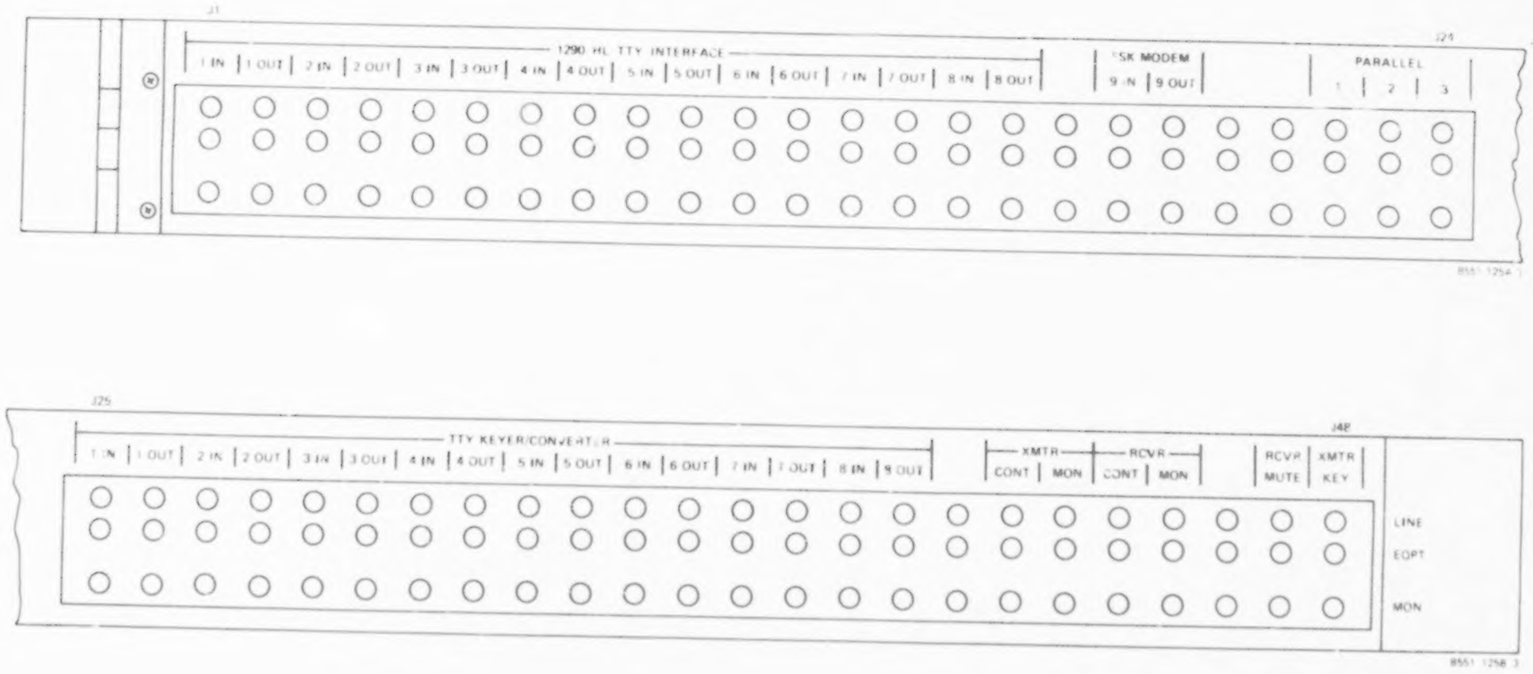

J1
1290 HL TTY INTERFACE
1 IN
1 OUT
2 IN
2 OUT
3 IN
3 OUT
4 IN
4 OUT
5 IN
5 OUT
6 IN
6 OUT
7 IN
7 OUT
8 IN
8 OUT
FSK MODEM
9 IN
9 OUT
J24
PARALLEL
1
2
3
8551 1254
J25
TTY KEYER/CONVERTER
1 IN
1 OUT
2 IN
2 OUT
3 IN
3 OUT
4 IN
4 OUT
5 IN
5 OUT
6 IN
6 OUT
7 IN
7 OUT
8 IN
9 OUT
XMTR
CONT
MON
RCVR
CONT
MON
J48
RCVR
MUTE
XMTR
KEY
LINE
EQPT
MON
8551 1258 3

Figure 3-4. DC Jackfield A1A1A3

Jack	
J1	
LINE	Permits patch
EQPT	Not connecte
MON	Permits moni
J2	
LINE	Permits patch
EQPT	Not connecte
MON	Permits moni
J3	Same as J1, b
J4	Same as J2, b
J5	Same as J1, b
J6	Same as J2, b
J7	Same as J1, b
J8	Same as J2, b
J9	Same as J1, b
J10	Same as J2, b
J11	Same as J1, b
J12	Same as J2, b
J13	Same as J1, b
J14	Same as J2, b
J15	Same as J1, b
J16	Same as J2, b
J17	Spare.
J18	
LINE	Permits patch
EQPT	Permits patch
MON	Permits moni

Table 3-4. DC Jackfield A1A1A3, Jack Identification

Function
g into channel 1 low-level input of high-level interface A1A1A1.
ring channel 1 low-level input to high-level interface.
g from channel 1 low-level output of high-level interface.
ring channel 1 low-level output of high-level interface.
t for channel 2.
t for channel 2.
t for channel 3.
t for channel 3.
t for channel 4.
t for channel 4.
t for channel 5.
t for channel 5.
t for channel 6.
t for channel 6.
t for channel 7.
t for channel 7.
t for channel 8
t for channel 8.
g into low-level input of FSK modem A1A3A1.
g from tty send line of TTY/RADIO connector J5 on secure patch-panel A1A1A7.
ring low-level input signal to FSK modem A1A3A1.

Table 3-4. DC Jackfield A1A1A3, Jack Identification-Continued

Jack	Function
J19	
LINE	Permits patching from low-level output of FSK modem A1A3A1.
EQPT	Permits patching into tty receive line of TTY/RADIO connector J5 on secure patch-panel A1A1A7.
MON	Permits monitoring low-level output of FSK modem A1A3A1.
J20, J21	Spare.
J22, J23, and J24	Parallel-circuit, 2-wire jack group. Each LINE jack connects in parallel with related EQPT jack and MON jack.
J25	
LINE	Permits patching into channel 1 keyer input of tone keyer/converter A1A1A5.
EQPT	Permits patching from channel 1 low-level dc output of 1290 FSK modem A1A2A1.
MON	Permits monitoring channel 1 keyer input of tone keyer/converter A1A1A5.
J26	
LINE	Permits patching from channel 1 converter output of tone keyer/converter A1A1A5.
EQPT	Permits patching into channel 1 low-level dc input of 1290 FSK modem A1A2A1.
MON	Permits monitoring channel 1 converter output of tone keyer/converter A1A1A5.
J27	Same as J25, but for channel 2.
J28	Same as J26, but for channel 2.
J29	Same as J25, but for channel 3.
J30	Same as J26, but for channel 3.
J31	Same as J25, but for channel 4.
J32	Same as J26, but for channel 4.
J33	
LINE	Permits patching into channel 5 keyer input of tone keyer/converter A1A1A6.
EQPT	Permits patching from channel 5 low-level dc output of 1290 FSK modem A1A2A1.
MON	Permits monitoring channel 5 keyer input to tone keyer/converter A1A1A6.

Table 3-4. DC Jackfield A1A1A3, Jack Identification-Continued

Jack	Function
J34	
LINE	Permits patching from channel 5 converter output of tone keyer/converter A1A1A6.
EQPT	Permits patching into channel 5 low-level dc input of 1290 FSK modem A1A2A1.
MON	Permits monitoring channel 5 converter output of tone keyer/converter A1A1A6.
J35	Same as J33, but for channel 6.
J36	Same as J34, but for channel 6.
J37	Same as J33, but for channel 7.
J38	Same as J34, but for channel 7.
J39	Same as J33, but for channel 8.
J40	Same as J34, but for channel 8.
J41	Spare.
J42	
LINE	Permits patching from RADIO CNTL binding posts on signal entry panel A3, and from radio control bus of control-monitor A1A3A5. (The two lines are parallel circuits.)
EQPT	Permits patching into control bus input of exciter A1A2A2.
MON	Permits monitoring control bus output from RADIO CNTL binding posts on signal entry panel and from control-monitor.
J43	
LINE	Permits patching into RADIO MON binding posts on signal entry panel and into radio monitor bus of control-monitor. (The two lines are parallel circuits.)
EQPT	Permits patching from monitor bus output of exciter.
MON	Permits monitoring monitor bus input to RADIO MON binding posts on signal entry panel and to control-monitor.
J44	
LINE	Same as LINE jack J42.
EQPT	Permits patching into control bus input of receiver A1A3A3.
MON	Same as MON jack J42.

Table 3-4. DC Jackfield A1A1A3, Jack Identification-Continued

Jack	Function
J45	
LINE	Same as LINE jack J43.
EQPT	Permits patching from monitor bus output of receiver.
MON	Same as MON jack J43.
J46	Spare.
J47	
LINE	Permits patching from RADIO RCV MUTE binding post on signal entry panel and into mute input of control-monitor. (The two lines are parallel circuits.)
EQPT	Permits patching into mute input of receiver A1A3A3.
MON	Permits monitoring receive mute line signal at RADIO RCV MUTE binding post on signal entry panel and at mute input of control-monitor.
J48	
LINE	Permits patching from RADIO KEY binding post on signal entry panel and from key output of control-monitor. (The two lines are parallel circuits.)
EQPT	Permits patching into keyline input of exciter.
MON	Permits monitoring key signals at RADIO KEY binding post on signal entry panel and at control-monitor.

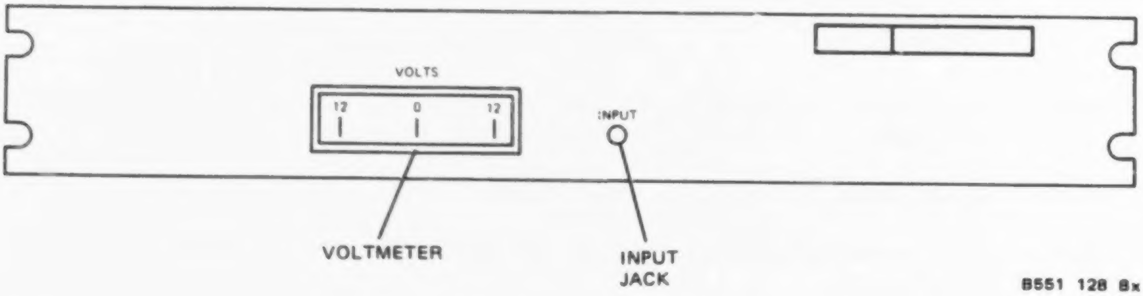
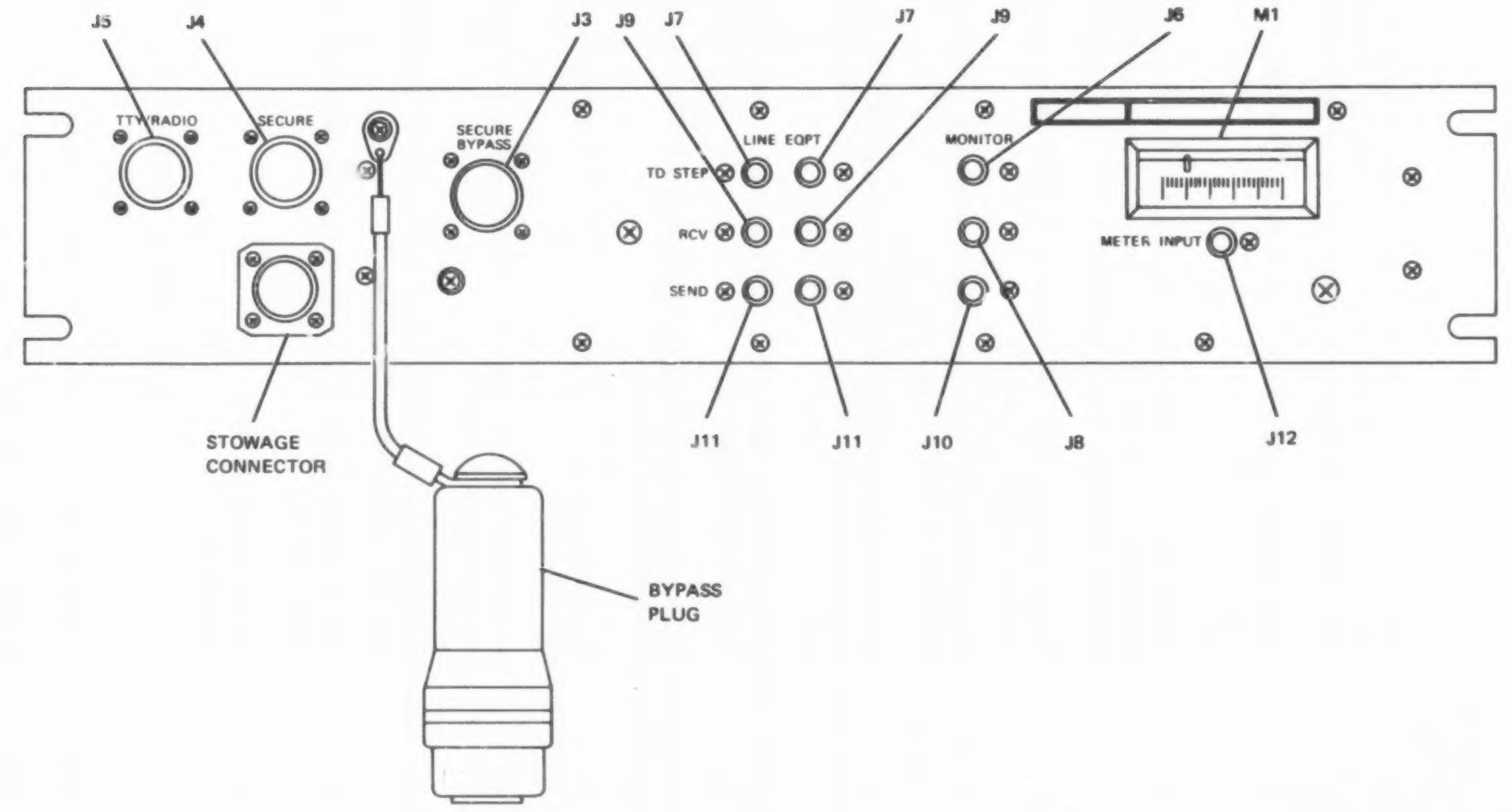


Figure 3-5. Voltmeter Panel A1A1A4


J5
J4
J3
J9
J7
J7
J9
J6
M1
TTY/RADIO
SECURE
SECURE BYPASS
LINE EQPT
TD STEP
RCV
SEND
MONITOR
METER INPUT
STOWAGE CONNECTOR
J11
J11
J10
J8
J12
BYPASS PLUG

B551 130 Bx

Figure 3-6. Secure Patch-Panel A1A1A7

Table 3-5. Secure Patch-Panel A1A1A7, Connectors, Jacks, and Indicators

Name	Reference designation	Function
SECURE BYPASS connector	J3	Permits patching tty A1A2A3 through TTY/RADIO connector J5 to FSK modem A1A3A1 (for nonsecure tty operation). Accepts secure bypass plug, which patches tty to TSEC/KWX-11 A2A4 (for secure tty operation).
SECURE connector	J4	Permits patching TSEC/KWX-11 A2A4 through TTY/RADIO connector J5 to FSK modem A1A3A1.
TTY/RADIO connector	J5	Permits patching FSK modem A1A3A1 through SECURE connector J4 to TSEC/KWX-11 A2A4 (for secure tty operation) or through SECURE BYPASS connector J3 to TTY A1A2A3 (for nonsecure tty operation).
TD STEP MONITOR jack	J6	Permits monitoring TSEC/KWX-11 A2A4 TD STEP line signal without breaking signal flow through J7.
TD STEP LINE jack	J7	Permits patching from TD STEP output of TSEC/KWX-11 A2A4; breaks signal flow to TD STEP EQPT jack.
TD STEP EQPT jack	J7	Permits patching into TD STEP INPUT of optional (UGC-129) local tty equipment (except tty UGC-74); breaks signal flow from TD STEP LINE jack.
RCV MONITOR jack	J8	Permits monitoring TSEC/KWX-11 A2A4 loop output signal without breaking signal flow through J9.
RCV LINE jack	J9	Permits patching from loop output of TSEC/KWX-11 A2A4; breaks signal flow to RCV EQPT jack.
RCV EQPT jack	J9	Permits patching into receive input of tty A1A2A3; breaks signal flow from RCV LINE jack.
SEND MONITOR jack	J10	Permits monitoring TSEC/KWX-11 A2A4 loop input signal without breaking signal flow through J11.
SEND LINE jack	J11	Permits patching into TSEC/KWX-11 A2A4 loop input; breaks signal flow from SEND EQPT jack.
SEND EQPT jack	J11	Permits patching from send output of tty A1A2A3; breaks signal flow to SEND LINE jack.
METER INPUT Jack	J12	Permits patching signals to voltmeter M1.
Voltmeter	M1	Indicates voltage level of signals patched to METER INPUT jack J12.
Bypass plug	None	Permits patching tty A1A2A3 to TSEC/KWX-11 A2A4.
Stowage connector	None	Stowage connector for bypass plug.

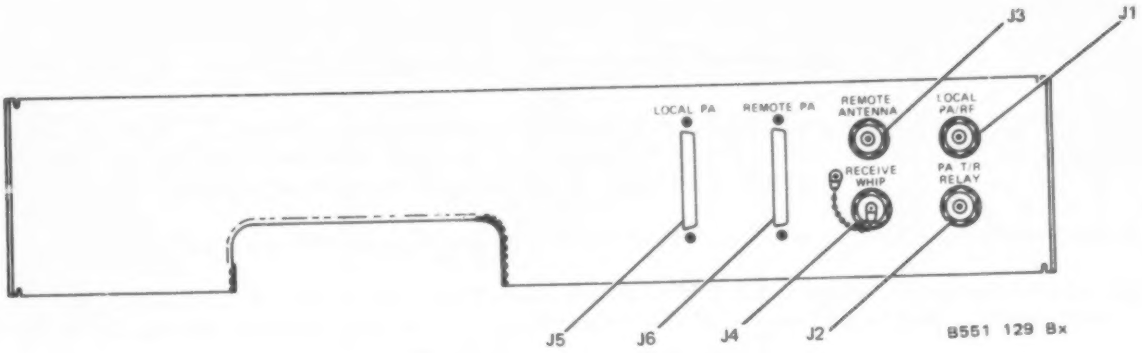

J3
J1
LOCAL PA
REMOTE PA
REMOTE ANTENNA
LOCAL PA/RF
RECEIVE WHIP
PA T/R RELAY
J5
J6
J4
J2
B551 129 Bx

Figure 3-7. Radio Patch-Panel A1A2A4

Table 3-6. Radio Patch-Panel A1A2A4, Connectors

Name	Reference designation	Function
LOCAL PA/RF	J1	Connects transmit rf output of preselector A1A3A7 to rf input of local pa A1A4A3.
PA T/R RELAY	J2	Connects receive simplex output of local pa A1A4A3 to receive rf input of preselector A1A3A9.
REMOTE ANTENNA	J3	Connects receive rf from a remote antenna to rf input of preselector A1A3A9, or connects transmit rf output of preselector A1A3A7 to rf input of a remote pa.
RECEIVE WHIP	J4	Connects receive rf from receive whip antenna to rf input of preselector A1A3A9.
LOCAL PA	J5	Connects pa control lines from exciter A1A2A2 to local pa A1A4A3.
REMOTE PA	J6	Connects pa control lines from exciter A1A2A2 to REMOTE PA binding posts on signal entry panel A3.

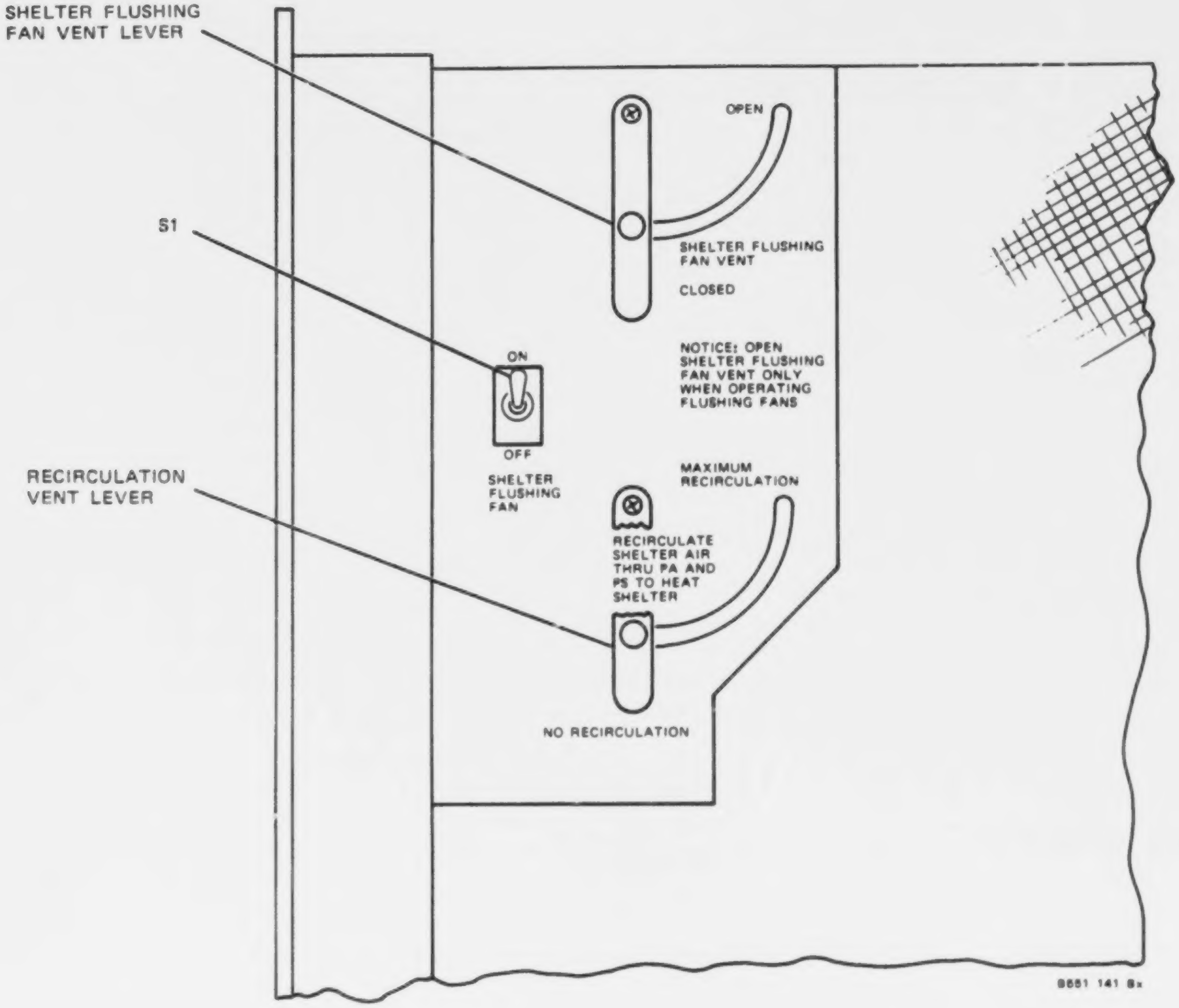

SHELTER FLUSHING FAN VENT LEVER
S1
RECIRCULATION VENT LEVER
OPEN
SHELTER FLUSHING FAN VENT
CLOSED
NOTICE: OPEN SHELTER FLUSHING FAN VENT ONLY WHEN OPERATING FLUSHING FANS
ON
OFF
SHELTER FLUSHING FAN
MAXIMUM RECIRCULATION
RECIRCULATE SHELTER AIR THRU PA AND PS TO HEAT SHELTER
NO RECIRCULATION
8881 141 8x

Figure 3-8. Blower Fan Assembly A5

Table 3-7. Blower Assembly A5, Controls

Name	Reference designation	Function
SHELTER FLUSHING FAN switch	S1	Applies power to shelter flushing blowers B1 through B6.
SHELTER FLUSHING FAN VENT lever	None	Opens or closes shelter flushing fan vent.
Recirculation vent lever	None	Opens or closes vents that recirculate shelter air through pa and power supply ducts to heat shelter.

Section II. OPERATION INSTRUCTIONS

3-10. SCOPE. This section contains starting, normal operating, and stopping procedures for Communication Central AN/TSC-60(V)7. Unless otherwise specified, the operating procedures in this section are for the configuration of AN/TSC-60(V)7 described in the installation procedures of chapter 2, and as follows.

3-10.1. Radio Equipment Operation. The operator can operate radio equipment by either local or remote control.

3-10.1.1. Local Control. Local control is the normal method of equipment operation. The operator uses the front-panel controls on each unit. Front-panel indicators on control-monitor A1A3A5 show additional radio equipment status.

3-10.1.2. Remote Control. Setting the radio equipment for remote control and operating the front-panel controls of the control-monitor gives the operator remote control of the equipment. The operator can control the equipment locally with the control-monitor installed in the shelter or remotely with the control-monitor moved to a remote site.

3-10.2. Equipment Designations. Operating procedures identify shelter equipment by reference designators (if assigned).

3-11. STARTING PROCEDURES. The following procedures apply primary source power to the shelter and energize shelter power circuits.

3-11.1. Primary Power Application. Apply 120/208-V ac, 3-phase, 4-wire, 50/60- or 400-Hz power to the shelter as follows:

NOTE

All shelter equipment except the environmental control unit (ECU) accepts 50/60- and 400-Hz primary power. The ECU accepts only one of these frequencies; an identification plate on the left side of the ECU specifies its power frequency requirements. Applying source power of a different frequency to the shelter prevents operation of the ECU.

a. At power distribution panel assembly A2A1, verify that all circuit breakers and power switches are off.

b. Energize the primary power source.

c. At power distribution panel assembly A2A1, proceed as follows:

  (1) Set METER SELECT switch S3 to ØA, ØB, and ØC in turn. Read voltage on AC VOLTS meter M2. The reading should be 120 ± 10 V ac for each phase.

  (2) Read power frequency on frequency meters M3 and M4. The reading should be 50/60 Hz on meter M3 or 400 Hz on meter M4, as applicable.

CAUTION

To prevent damage to equipment, do not proceed with starting procedures if primary power is not within tolerances specified above.

  (3) Set MAIN POWER circuit breaker CB1 to ON.

3-11.2. Shelter Power Application. Energize shelter equipment power circuits as required. At power distribution panel assembly A2A1, proceed as follows.

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3-11.2.1. Lighting. With the BLACK-OUT OVERRIDE switch (S2) at ON, the primary lighting (white lights) goes out and the blackout (blue) light comes on when the shelter door is opened. With the switch at BLACK-OUT OVERRIDE, the primary lighting remains on whether the shelter door is open or closed. Turn on shelter lighting as follows:

a. Press LIGHTS circuit breaker CB5 to ON.

b. Set BLACK-OUT OVERRIDE switch S2 to on or to BLACK-OUT OVERRIDE as desired.

c. Set LIGHTS switch S1 to ON.

3-11.2.2. Environmental Control Unit.

a. Check the primary power frequency at the frequency meters on the power distribution panel. Verify that the power frequency is the frequency required by the ECU (50/60 Hz).

CAUTION

To prevent electrical damage to the ECU, do not apply power to the ECU if the primary power frequency is not 50/60 Hz.

b. Set ENVIRONMENTAL CONTROL UNIT circuit breaker CB2 to ON.

3-11.2.3. Power Amplifier. Set POWER AMPLIFIER circuit breaker CB3 to ON to apply 120/208-V ac, 3-phase power to power amplifier (pa) power supply A1A4A2.

3-11.2.4. Utility Outlets. Press UTILITY OUTLETS circuit breaker CB4 to apply power to the utility outlets on the shelter left wall.

3-11.2.5. Control-Monitor/Receiver and Preselector. Press CONT/RCVR/PRESEL circuit breaker CB6 to apply power to control-monitor A1A3A5, receiver A1A3A3, and preselector A1A3A9.

3-11.2.6. Exciter/Preselector. Press EXCTR/PRESEL circuit breaker CB7 to apply power to exciter A1A2A2 and preselector A1A3A9.

3-11.2.7. 1290 Modem/Loop Power Supply. Press 1290 MODEM/LOOP SUPPLY circuit breaker CB8 to apply power to 1290 FSK modem A1A2A1 and loop power supply A1A1A9. The 1290 FSK modem and loop supply power A1A1A9 power high-level interface A1A1A1.

3-11.2.8. Tone Keyer/Converter. Press TONE KEYER/CONV circuit breaker CB9 to apply power to tone keyer/converters A1A1A5/A1A1A6 and FSK modem A1A3A1.

3-11.2.9. KW-7/KWX-11. Press KW-7/KWX-11 circuit breaker CB10 to apply power to KW-7 A2A2, KW-7 A2A3, and KWX-11 A2A4.

3-11.2.10. Teletypewriter. Press TTY circuit breaker CB11 to apply power to teletypewriter A1A2A3.

3-11.3. Shelter External Power Application. Set utility outlets circuit breaker CB1 on power entry panel A2A6 to ON. The circuit breaker applies 120-V ac, phase A power to utility outlet connectors J2 and J3 on the power entry panel.

3-11.4. Equipment Turn-On. Turn on individual shelter equipment as follows. Unless otherwise specified below, individual equipment may be turned on as required and in any order, as determined by operating requirements.

3-11.4.1. Environmental Control Unit A4. The environmental control unit (ECU) is the primary ventilation unit for the shelter. If shelter heating or cooling is not required, operate the ECU in the vent mode any time site conditions require the shelter door to remain closed during equipment operation. Turn on the ECU as follows.

a. On front of ECU support rack, press down release clip. Lift up access door.

b. On ECU front panel, set mode switch to OFF.

c. set CONTROL and COMPR circuit breakers to ON.

d. Turn VENT thumbwheel control all the way down (open).

e. For shelter ventilation, set mode switch to VENT. Outside air should flow into the shelter through the top air duct on the ECU.

f. For shelter cooling, set the mode switch to COOL. The ECU refrigerant compressor and condenser fan should operate immediately; cool air should flow into the shelter as soon as the unit stabilizes.

g. For shelter heating, set the mode switch to LOW HEAT or HIGH HEAT as required. Warm air should flow into the shelter.

h. Set EVAPORATOR FAN SPEED switch to LOW or HIGH as required.

i. Adjust the TEMPERATURE SELECTOR control as required to keep the temperature comfortable.

j. Lower and press closed the ECU access door.

k. On ECU access door, lift cable out of bracket. Lift up vent release lips, remove and turn air vents as required; release vent clips.

l. Reposition ECU power cable in bracket.

3-11.4.2. Blower Fan Assembly A5. Blower fan assembly A5 exhausts heated air from the shelter pa enclosure and ambient air from the shelter interior. When opened, recirculation vents recirculate the heated pa exhaust air into the shelter. Open these vents when added heating of the shelter is required. For added shelter ventilation, open the shelter flushing fan vents and set the SHELTER FLUSHING FAN switch to ON. The flushing fans exhaust interior air from the shelter.

3-11.4.3. 1290 FSK Modem A1A2A1. Set power switch to ON. The POWER lamp lights.

3-11.4.4. MPC-1000T FSK Modem A1A3A1. Set power switch to POWER.

3-11.4.5. Exciter A1A2A2. Turn on as follows:

a. Set PA PWR switch of OFF.

b. Set KEY switch to NORM.

c. Set CONT switch to LCL.

d. Press PWR switch on (in).

e. Clear EXCITER FAULT indicator by changing one of the frequency digits.

3-11.4.6. Receiver A1A3A3. Turn on as follows:

a. Set CONT switch to LCL.

b. Press PWR switch on (in).

c. Clear RCV FAULT indication by changing one of the frequency digits.

3-11.4.7. Control-Monitor A1A3A5. Turn on and test the control-monitor as follows.

a. Set the power switch to ON.

b. Press the LAMP TEST switch. All indicators light.

c. Set the CONTROL SELECT switch to SELF TEST. The OK indicator lights at the end of the initial test cycle.

d. Press each of the remaining front-panel switches (except audio controls). The related indicator lights when each switch is pressed.

e. Set the CONTROL SELECT switch to any desired control/monitor position.

3-11.4.8. Preselectors A1A3A7 and A1A3A9. Press PWR switch on (in).

3-11.4.9. Power Amplifier A1A4A3. Prepare the pa to receive power as follows.

a. Set the LOCAL/REMOTE switch to LOCAL.

b. Set the MANUAL/AUTO switch to AUTO.

c. Set the PA POWER switch to OFF.

d. Set the PA KEY switch to OFF.

3-11.4.10. Power Supply A1A4A2. Apply power to pa A1A4A3 by turning on the power supply as follows:

a. Set power supply circuit breakers to ON in the following order; MAIN POWER; LOW VOLTAGE; 50/40 VDC A, B, C, and D; and 35 VDC.

b. On pa A1A4A3, set LOCAL/REMOTE switch to REMOTE.

3-11.4.11. Teletypewriter A1A2A3. Before turning on and operating the teletypewriter (tty), set it up to interface with shelter equipment as follows.

a. Set BAUD RATE switch to 75.

b. Set REC MODE and XMIT MODE switch to $\overline{\text{LO DATA}}$.

c. Set CLOCK switch to INT.

d. Set remaining tty switches for desired operating mode. (Refer to TM 11-5815-602-12).

e. Set POWER switch to ON.

3-12. NORMAL OPERATING PROCEDURES. The following paragraphs contain radio, telephone, and tty equipment operating procedures. The procedures innerconnect equipment and set controls as required for signal compatibility. Where multiple equipment configurations are possible, a typical operating procedure is given.

WARNING

> When operated into an antenna, pa A1A4A3 can produce lethal voltages on the antenna element and dangerous electromagnetic fields close to the antenna. To avoid exposure to unsafe levels of rf energy, stay clear of the antenna when the pa is keyed.

3-12.1. Radio Procedures. The following paragraphs give system-level operating procedures for receiver A1A3A3, exciter A1A2A2, pa A1A4A3, and radio control-monitor A1A3A5.

3-12.1.1. Receiver A1A3A3. Receiver operating procedures include patching signals from the receiver and setting front-panel controls as required to interface the receiver with other equipment. For detailed operating procedures on the receiver, refer to the related technical manual listed in table 1-5, Related Publications.

3-12.1.1.1. Simplex/Duplex Patching. The receiver normally operates in duplex mode. The installation procedures in chapter 2 connect the receiver rf input cables for duplex reception. For simplex mode, change patching at radio patch-panel A1A2A4 as follows.

a. Disconnect connector P1 of cable W103 from RECEIVE WHIP connector J4.

b. Connect connector P1 of Cable W103 to PA T/R RELAY connector J2.

3-12.1.1.2. Mute Signal Patching. When the receiver operates on the same frequency as the exciter, mute the receiver. To mute the receiver, connect an external line to the RADIO RCV MUTE binding post on signal entry panel A3, or patch dc jackfield A1A1A3 RCV MUTE EQPT jack J47 to a suitable muting circuit (for example, XMTR KEY MON jack J48 when using external keyline to key exciter). Grounding either line mutes the receiver; an open (or maximum of 30 V dc) line allows reception.

3-12.1.1.3. Data Reception. The following procedure operates the receiver as a radio link in a tty data communications system. To operate the receiver in a high-speed data network such as TADIL A or B, refer to the receiver technical manual (table 1-5, Related Publications). The following steps set the receiver for data reception on independent sideband (ISB) channel A1. To select another channel, change these switch settings and the signal patching to the tty equipment.

a. At the receiver, set the MODE switch to ISB.

b. Set the CH A1 enable switch to ON.

c. Set the CH A1 AGC switch to DATA.

d. Set the RF GAIN control fully clockwise.

e. Set remaining controls as desired.

3-12.1.2. Exciter A1A2A2. Exciter operating procedures include patching signals to the exciter and setting front-panel controls as required to interface the exciter with other equipment. For detailed operating procedures for the exciter, refer to the related technical manual listed in table 1-5, Related Publications.

3-12.1.2.1. Local/Remote PA Patching. The exciter normally drives local pa A1A4A3 through connections at radio patch-panel A1A2A4. To patch the exciter to a remote pa, refer to Chapter 2, Installation.

3-12.1.2.2. Keyline Patching. To control exciter keying with a keyline outside the shelter, connect the line to the RADIO KEY binding post on signal entry panel A3. To key the exciter with shelter equipment, patch that equipment's key output to XMTR KEY EQPT jack J48 on dc jackfield A1A1A3. Grounding the keyline keys the exciter when the exciter KEY switch is at EXT.

3-12.1.2.3. Data Transmission. The following procedure operates the exciter as a radio link for tty data communication.

NOTE

The following steps set the exciter for data transmission on ISB channel A1. To select another channel, change these switch settings and the signal patching from the tty equipment.

a. At the exciter, set the MODE SWITCH TO ISB.

b. Set the A1 CHANNEL ENABLE switch to LINE.

c. Set the FREQUENCY KHZ switches to the desired operating frequency.

NOTE

Omit the following step if using the local pa. The step allows warmup time usually required by a high-output-power pa (remote pa).

d. Set the PA PWR switch to STBY. Allow adequate warmup time for the pa in use.

e. Set the PA PWR switch to LOW PWR or HIGH PWR as desired.

f. Momentarily set KEY switch to LOCK and allow pa to tune (not more than 10 seconds for local pa).

NOTE

When tuning is complete, data communications can be established. The exciter must be manually keyed if the tty equipment in use does not supply key signals to the exciter.

g. Set the KEY switch to LOCK for manual keying, or to EXT for external keyline keying by tty equipment.

3-12.1.3. Power Amplifier A1A4A3. Normally, the exciter operates the pa remotely after initial turn-on; paragraph 3-12.1.2.3. gives a typical example. For detailed operating procedures, including manual control, refer to the related technical manual listed in Table 1-5, Related Publications.

3-12.1.4. Control-Monitor A1A3A5. Control-monitor A1A3A5 controls and/or monitors operation of shelter radio equipment as follows.

3-12.1.4.1. In-Shelter Operation. The operator normally uses the control-monitor for equipment monitoring. Setting the CONTROL SELECT switch to XMTR 1 gives status indications for exciter A1A2A2, preselector A1A3A7 (if used), local pa A1A4A3 (or a remote pa compatible with exciter A1A2A2), and antenna coupler A6. The RCVR 1 position gives status indications for receiver A1A3A3 and preselector A1A3A9 (if used). The XMTR 2 and RCVR 2 positions are disabled. For full control of shelter radio equipment using the control-monitor, proceed as follows.

a. At exciter A1A2A2, set the CONT switch to REM.

b. At receiver A1A3A3, set the CONT switch to REM.

c. At the control-monitor, use the CONTROL SELECT switch to select radio equipment to be operated.

d. Use the control-monitor's front-panel controls to operate selected equipment. For detailed procedures on control-monitor operation, refer to the control-monitor technical manual listed in table 1-5, Related Publications.

3-12.1.4.2. Remote Site Operation. The control-monitor operates the same way at a remote site as in the shelter. Refer to Chapter 2, Installation, for control-monitor setup at a remote site.

3-12.2. Telephone Procedures. Operating procedures for telephone sets TA-312/PT and TA-838/TT are in individual equipment technical manuals. Refer to table 1-5, Related Publications.

3-12.3. Teletypewriter Procedures. The following paragraphs give operating procedures for shelter tty equipment. The procedures innerconnect equipment and set controls as required for signal compatibility. Where multiple equipment configurations are possible, typical procedures are given.

3-12.3.1. Local Tty A1A2A3. Local tty A1A2A3 normally connects through subscriber lines to remote tty equipment or connects through shelter radio equipment into a data communications system. In either case, the tty signals go through secure patch panel A1A1A7. The panel can patch the tty signals through secure equipment A2A2, A2A3, and A2A4. The following paragraphs give setup and operating procedures for the local tty.

3-12.3.1.1. Secure Signaling. At secure patch panel A1A1A7, select secure or nonsecure local tty signaling as follows.

3-12.3.1.1.1. Secure.

a. Connect connector P1 of cable W202 to TTY/RADIO connector J5 and connector P2 of the cable to SECURE connector J4.

b. Install secure bypass plug on SECURE BYPASS connector J3.

3-12.3.1.1.2. Nonsecure.

a. Disconnect secure bypass plug from SECURE BYPASS connector J3.

b. Install secure bypass plug on stowage connector.

c. Disconnect connector P2 of cable W202 from SECURE connector J4.

d. Connect connector P1 of cable W202 to TTY/RADIO connector J5 and connector P2 of the cable to SECURE BYPASS connector J3.

3-12.3.1.2. Local Tty-to-Radio Link. To operate the local tty through FSK modem A1A3A1 into a duplex radio link (receiver A1A3A3 and exciter A1A2A2), perform the following steps.

a. Select secure or nonsecure tty signaling (see paragraph 3-12.3.1.1).

NOTE

The following steps patch local tty signals to ISB channel A1 of the radio equipment. The tty signals may be transmitted on other channels by changing the related patching at audio jackfield A1A1A2.

b. At audio jackfield A1A1A2, patch FSK MODEM 9 IN EQPT jack J19 to the RADIO A1 RX EQPT jack J8.

c. Patch FSK MODEM 9 OUT EQPT jack J18 to RADIO A1 TX EQPTjack J7.

d. Set receiver A1A3A3 for data reception (refer to paragraph 3-12.1.1.3).

e. Set FSK modem A1A3A1 controls as specified in paragraphs 3-12.3.3.

f. Set exciter A1A2A2 for data transmission (refer to paragraph 3-12.1.2.3).

g. Refer to the related equipment technical manual for operation of the local tty (table 1-5, Related Publications).

3-12.3.1.3. Local Tty-to-Subscriber Line. Local tty A1A2A3 interfaces through subscriber lines with either dc or audio signaling remote tty equipment. The following paragraphs are local tty-to-subscriber line setup procedures.

3-12.3.1.3.1. DC Signaling. To interface the local tty to remote equipment requiring ±60-volt, 60-milliampere neutral (dc tty) signals, proceed as follows.

NOTE

The remote tty equipment must supply the ±60-V dc loop voltage for the subscriber send line.

a. At signal entry panel A3, connect the remote tty subscriber send line to the TTY TRANSMIT (DC INPUT) 1 binding posts.

b. Connect the subscriber receive line to the TTY RECEIVE (DC OUTPUT) 1 binding posts.

c. Select secure or nonsecure tty signaling (see paragraph 3-12.3.1.1).

d. At dc jackfield A1A1A3, patch FSK MODEM 9 IN EQPT jack J18 (local tty send) to 1290 HL TTY INTERFACE 1 IN LINE jack J1.

e. Patch FSK MODEM 9 OUT EQPT jack J19 (local tty receive) to 1290 HL TTY INTERFACE 1 OUT LINE jack J2.

f. Refer to the related equipment technical manual for operation of the local tty (table 1-5, Related Publications).

3-12.3.1.3.2. Audio Signaling. To interface the local TTY to remote equipment requiring audio signaling, proceed as follows.

a. At signal entry panel A3, connect the remote tty subscriber audio output line to the TTY CONVERTER (AUDIO INPUT) binding posts.

b. Connect the subscriber audio input line to the TTY KEYER (AUDIO OUTPUT) binding posts.

c. Select secure or nonsecure tty signaling (see paragraph 3-12.1.1).

d. Set FSK modem A1A3A1 controls as specified in paragraph 3-12.3.3.

e. Refer to the related equipment technical manual for operation of the local tty (table 1-5, Related Publications).

3-12.3.2. Subscriber Tty. Remote tty equipment connects through subscriber lines to the shelter. Jackfields permit patching the subscriber line signals to either the local tty (see paragraph 3-12.3.1.3) or to the hf radio link. The following paragraphs are subscriber line-to-radio link setup procedures for dc and audio TTY signaling.

3-12.3.2.1. DC Signaling. The following steps interface eight dc tty channels through 1290 FSK modem A1A2A1 to th hf radio link.

a. At signal entry panel A3, connect the eight dc tty subscriber output lines to the eight pairs of TTY TRANSMIT (DC INPUT) binding posts.

b. Connect the eight subscriber input lines to the eight pairs of TTY RECEIVE (DC OUTPUT) binding posts.

c. At dc jackfield A1A1A3, patch high-level interface A1A1A1 to 1290 FSK modem A1A2A1 as listed in table 3-8.

d. At audio jackfield A1A1A2, patch 1290 COMPOSITE 1 OUT LINE jack J21 to RADIO A1 TX EQPT jack J7.

e. Patch 1290 COMPOSITE 1 IN LINE jack J22 to RADIO A1 RX EQPT jack J8.

f. Set 1290 FSK modem A1A2A1 controls as specified in paragraph 3-12.3.4.

g. Set receiver A1A3A3 for data reception as described in paragraph 3-12.1.1.3.

h. Set exciter A1A2A2 for data transmission as described in paragraph 3-12.1.2.3.

Table 3-8. High-level Interface Patching

DC Jackfield A1A1A3	
From	To
1290 HL TTY INTERFACE -	TTY KEYER/CONVERTER -
1 OUT LINE jack J2	1 OUT EQPT jack J26
2 OUT LINE jack J4	2 OUT EQPT jack J28
3 OUT LINE jack J6	3 OUT EQPT Jack J30
4 OUT LINE jack J8	4 OUT EQPT jack J32
5 OUT LINE jack J10	5 OUT EQPT jack J34
6 OUT LINE jack J12	6 OUT EQPT jack J36
7 OUT LINE jack J14	7 OUT jack J38
8 OUT LINE jack J16	8 OUT jack J40
1 IN LINE jack J1	1 IN EQPT jack J25
2 IN LINE jack J3	2 IN EQPT jack J27
3 IN LINE jack J5	3 IN EQPT jack J29
4 IN LINE jack J7	4 IN EQPT jack J31
5 IN LINE jack J9	5 IN EQPT jack J33
6 IN LINE jack J11	6 IN EQPT jack J35
7 IN LINE jack J13	7 IN EQPT jack J37
8 IN LINE jack J15	8 IN EQPT jack J39

3-12.3.2.2. Audio Signaling. The following steps interface eight audio tty channels through eight duplex circuits in tone keyer/converter shelves A1A1A5 and A1A1A6 to the hf radio link.

a. At signal entry panel A3, connect the eight audio tty subscriber output lines to the eight pairs of TTY CONVERTER (AUDIO INPUT) binding posts.

b. Connect the eight subscriber input lines to the eight pairs of TTY KEYER (AUDIO OUTPUT) binding posts.

c. At audio jackfield A1A1A2, patch 1290 COMPOSITE 1 OUT LINE jack J21 to RADIO A1 TX EQPT jack J7.

d. Patch 1290 COMPOSITE 1 IN LINE jack J22 to RADIO A1 RX EQPT jack J8.

e. Set controls on tone keyer/converter shelf 1 A1A1A5 and shelf 2 A1A1A6 equipment as specified in paragraph 3-12.3.5.

f. Set 1290 FSK modem A1A2A1 controls as specified in paragraph 3-12.3.4.

g. Set receiver A1A3A3 for data reception as described in paragraph 3-12.1.1.3.

h. Set receiver A1A2A2 for data transmission as specified in paragraph 3-12.1.2.3.

3-12.3.3. FSK Modem A1A3A1. Operating procedures for FSK modem A1A3A1 give switch settings required to interface the modem with other equipment.

a. At FSK modem A1A3A1, set the TONE KEYER switch to NORM.

b. Set the bandwidth switch to MEDIUM.

c. Set the sense switch to NORMAL.

d. Set the AFSK preset switch for the desired output frequency tone-pair (table 3-9).

e. Set the MODE switch to MS.

f. Set the AFSK on/off switch to on (up).

g. Set the DUPLEX switch to FULL.

h. Set the ON/STANDBY switch to ON.

3-12.3.4. 1290 FSK Modem A1A2A1. The following paragraphs give diversity and nondiversity operating procedures for 1290 FSK Modem A1A2A1. Table 3-9 shows the AFSK preset frequencies for the modem.

Table 3-9. FSK Modem A1A3A1 AFSK Preset Frequencies

Preset	Frequency (Hz)		
	Mark	Center	Space
A	1232	1275	1317
B	1575	2000	2425
C	500	600	700

3-12.3.4.1. Nondiversity. Nondiversity is the normal operating mode for the modem. The operating procedures below give switch settings required to interface each channel of the modem with other equipment.

a. On the composite card, set the COMP OUT 1 switch to SSB.

b. On each modulator and each demodulator card, set the COMP 1/COMP 2 switch to COMP 1.

c. On each modulator and each demodulator card, set the NORM/REV switch to NORM.

d. On each demodulator card, press the HOLD switch to hold off (switch in and blue indicator visible).

e. On each modulator card in use, press the MUTE switch to mute off (switch in and green indicator visible).

f. On each modulator card not in use, press the MUTE switch to mute (switch out and black indicator visible).

3-12.3.4.2. Diversity. Frequency diversity is an optional operating mode for either transmitting or receiving FSK signals. The following procedures give typical examples of diversity operation.

3-12.3.4.2.1. Transmit. Transmit diversity uses two modulators to transmit the same information on two channels of the same composite signal. The procedure below operates modem channels 1 and 2 in diversity and assumes channel 1 of tone converter/keyer shelf A1A1A5 supplies the input signal.

a. At dc jackfield A1A1A3, patch TTY KEYER/CONVERTER 1 OUT MON jack J26 to TTY KEYER/CONVERTER 2 OUT EQPT jack J28.

b. Set up the modem as specified in paragraph 3-12.3.4.1.

3-12.3.4.2.2. Receive. In receive diversity, the modem receives a composite signal that contains the same information on two different channels. The modem compares the signals on the two channels and selects the stronger signal. The procedure below operates modem channels 1 and 2 in diversity and supplies the output signal to channel 1 of tone converter/keyer shelf A1A1A5.

a. At audio jackfield A1A1A2, patch DIVERSITY SELECT 2 LINE jack J42 to DIVERSITY SELECT 1 EQPT jack J41.

b. Set up the modem as specified in paragraph 3-12.3.4.1.

3-12.3.5. Tone Keyer/Converter Shelf 1 and 2 (A1A1A5 and A1A1A6). Operating procedures for tone keyer/converter shelf 1 and shelf 2 equipment give switch settings required to interface tone keyers and tone converters with other equipment. For detailed operating procedures, refer to the related technical manuals listed in Table 1-5, Related Publications.

a. At each tone keyer, set the SIGNAL SENSE switch to negative (-).

b. At each tone converter, set the mode switch to LINE.

3-13. STOPPING PROCEDURES. The following paragraphs give turnoff procedures for shelter equipment and power circuits.

3-13.1. Teletypewriter A1A2A3. Set POWER switch to OFF.

3-13.2. FSK Modem A1A3A1. Set power switch to OFF.

3-13.3. 1290 FSK Modem A1A2A1. Set power switch to OFF.

3-13.4. Receiver A1A3A3. Press PWR switch to off.

3-13.5. Exciter A1A2A2.

a. Verify that CONT switch is at LCL.

b. Set KEY switch to NORM.

c. Set PA PWR switch to OFF.

d. Press PWR switch to off (out).

3-13.6. Power Amplifier A1A4A3. Verify that PWR SPLY indicator is off. (If on, set PA POWER switch to OFF.)

3-13.7. Power Supply A1A4A2. Set all circuit breakers to OFF.

3-13.8. Preselectors A1A3A7 and A1A3A9. Press PWR switch to off.

3-13.9. Control-Monitor A1A3A5. Set the power switch to OFF.

3-13.10. Blower Fan Assembly A5.

a. Set the SHELTER FLUSHING FAN switch to OFF.

b. Set the SHELTER FLUSING FAN VENT lever to CLOSED.

c. Set the recirculation vent lever to NO RECIRCULATION.

3-13.11. Environmental Control Unit A4.

a. Set mode switch to OFF.

b. Set CONTROL circuit breaker to OFF.

c. Set COMPR circuit breaker to OFF.

3-13.12. Power Entry Panel A2A6. Set utility outlets circuit breaker to off.

3-13.13. Power Distribution Panel Assembly A2A1.

a. Set all equipment circuit breakers to off.

b. Set the METER SELECT switch to OFF.

c. Set the LIGHTS switch to OFF.

d. Set the MAIN POWER circuit breaker to off.

Section III. EMERGENCY OPERATION

3-14. SCOPE. This section contains procedures the operator can follow to continue operation of Communication Central AN/TSC-60(V)7 if part of the equipment malfunctions.

3-15. EMERGENCY OPERATING PROCEDURES. The following paragraphs describe alternate modes of system operation and/or substitution procedures for selected shelter equipment.

3-15.1. Transmit Antenna Substitution. If the transmit antenna malfunctions but the coupler remains operational, substitute the receive antenna as follows.

a. At exciter A1A2A2, set PA PWR switch to OFF.

b. Press exciter PWR switch off.

c. At power supply A1A4A2, set MAIN POWER circuit breaker to OFF.

d. At power distribution panel A2A1, set POWER AMPLIFIER circuit breaker to off.

e. At preselectors A1A3A7 and A1A3A9, press PWR switch off.

f. At receiver A1A3A3, press PWR switch off.

g. Remove receive antenna from shelter mount (refer to paragraph 2-13.4).

h. Dismantle transmit antenna enough to allow removal of transmit whip (refer to paragraph 2-13.3); substitute receive whip and reassemble (refer to paragraph 2-9.4).

i. Patch the receiver for simplex operation (paragraph 3-12.1.1.1).

j. At receiver A1A3A3, press PWR switch on.

k. At preselectors A1A3A7 and A1A3A9, press PWR switch on.

l. At power distribution panel A2A1, set POWER AMPLIFIER circuit breaker to ON.

m. At power supply A1A4A2, set MAIN POWER circuit breaker to ON.

n. At exciter A1A2A2, press PWR switch on.

o. Set PA PWR switch to LOW PWR or HIGH PWR, as desired, and resume operation.

3-15.2. Receive Antenna Substitution. If the receive antenna malfunctions, patch the receiver for simplex operation (refer to paragraph 3-12.1.1.1).

3-15.3. FSK Modem A1A3A1 Substitution. If local tty modem A1A3A1 malfunctions, substitute any unused channel on tone keyer/converter A1A1A5 or A1A1A6. The following procedure gives a typical example of patching required to substitute tone keyer/converter channel eight for the mode. The procedure assumes that the local tty equipment is configured for operation described in paragraph 3-12.3.1.2.

a. At audio jackfield A1A1A2, patch RADIO A1 RX EQPT jack J8 to TTY KEYER/CONVERTER 8 IN EQPT jack J40.

b. Patch RADIO A1 TX EQPT jack J7 to TTY KEYER/CONVERTER 8 OUT EQPT jack J39.

c. At dc jackfield A1A1A3, patch FSK MODEM 9 OUT EQPT jack J19 to TTY KEYER/CONVERTER 8 OUT LINE jack J40.

d. Patch FSK MODEM 9 IN EQPT jack J18 to TTY KEYER CONVERTER 8 IN LINE jack J39.

NOTE

The channel 8 tone keyer/converter equipment operates at fixed FSK tone frequencies of 1232 Hz, mark, and 1317 Hz, space.

e. Resume tty operation.

CHAPTER 4

PRINCIPLES OF OPERATION

4-1. SCOPE. This chapter contains the principles of operation for Communication Central AN/TSC-60(V)7. Section I describes the overall function of the system. Section II describes the function of equipment not covered in separate manuals. For information on equipment not described in this chapter, refer to table 1-5, Related Publications.

Section I. FUNCTIONAL SYSTEM OPERATION

4-2. SCOPE. This section describes the function of the communication central at a system level. The description includes functions of subsystems and related equipment.

4-3. COMMUNICATION CENTRAL AN/TSC-60(V)7. The communication central (system) is a truck-mounted, transportable shelter containing equipment that transmits and receives radio frequency (rf) signals, teletypewriter (tty) data, and telephone communications. Figure F0-1 is a block diagram of the system. The system has five subsystems: signal distribution, radio, tty, telephone, and power. The following paragraphs describe the functions of the equipment in these subsystems.

4-3.1. Signal Distribution Subsystem. The signal distribution subsystem consists of signal entry panel A3, radio patch-panel A1A2A4, secure patch-panel A1A1A7, audio jackfield A1A1A2, and dc jackfield A1A1A3. The subsystem is the signal interface for shelter equipment. The following paragraphs describe the functions of the subsystem equipment.

4-3.1.1. Signal Entry Panel A3. The signal entry panel is the signal interface between the shelter and external equipment. The panel connects shelter radio equipment to external transmit and receive (remote) antennas and coupler A6; it connects subscriber tty lines and telephone lines to the shelter; and it connects control-monitor A1A3A5 (when at a remote site) to shelter radio equipment.

4-3.1.2. Radio Patch-Panel A1A2A4. The radio patch-panel permits patching the exciter rf signal and control lines to either local power amplifier (pa) A1A3A3 or a remote pa, and permits connecting receiver A1A3A3 (through preselector A1A3A9) to the receiver whip antenna, a remote antenna, or the transmit antenna (simplex mode). (Paragraph 4-7 gives a detailed description of the panel.)

4-3.1.3. Secure Patch-Panel A1A1A7. The secure patch-panel permits patching the local tty send and receive lines through secure equipment (A2A2, A2A3, and A2A4). For secure mode, the local tty connects to the secure equipment through the secure bypass plug installed on SECURE BYPASS connector J3 of the patch-panel. Cable W202 connects from SECURE connector J4 to tty/RADIO connector J5, and patches the secure equipment line input and line output through jacks J18 and J19 on dc jackfield A1A1A3 to FSK modem A1A3A1. For nonsecure mode, cable W202 connects from SECURE BYPASS connector J3 to tty/RADIO connector J5, bypassing the secure equipment.

4-3.1.4. Audio Jackfield A1A1A2. The audio jackfield gives flexibility for interconnecting major audio circuits. The normalled-through wiring of the jackfield circuits allows operation of most shelter equipment without patching. Inserting a patchcord connector into an EQPT jack breaks the normalled-through circuit to the related LINE jack and connects the EQPT-jack line to the patchcord. Conversely, patching into a LINE jack breaks the normalled-through circuit to the related EQPT jack and connects the patchcord to the line side of the LINE jack. MON jacks permit bridging across their related LINE jack without breaking signal flow.

4-3.1.5. DC Jackfield A1A1A3. The dc jackfield has the same general function as the audio jackfield, but is primarily for dc data tty circuits.

4-3.2. Radio Subsystem. The radio subsystem consists of an HF-8054A Receiver (receiver A1A3A3), an HF-8014A Exciter (exciter A1A2A2), the HF-8060 Preselectors (preselectors A1A3A7 and A1A3A9), an HF-8023 Power Amplifier (pa A1A4A3), an HF-8032 Power Supply (power supply A1A4A2), an HF-8040 Antenna Coupler (antenna coupler A6), a Radio Control-Monitor 373J-1 (control-monitor A1A3A5), a receive whip antenna, and a transmit whip antenna. The equipment permits full-duplex radio operation and operates in the 2- to 29.9999-MHz frequency range with 100-Hz tuning increments. The equipment operates up to four independent 2.85-kHz sidebands (channels) in a 12.58-kHz spectrum (figure 4-1). Each channel has a usable, modulating signal bandpass of 250 to 3100 Hz. Each channel can be enabled separately, making 2-channel independent sideband (ISB), single-channel ISB, AM, and CW operations compatible. The subsystem has three functions: receive, transmit, and control. The following paragraphs explain these functions.

4-3.2.1. Receive Functions. The rf signals received on the receive whip antenna enter the shelter through the antenna mount on blower assembly A5. Rf signals from a remote antenna enter the shelter at RECEIVE ANTENNA jack J8 on signal entry panel A3. The two rf signals go to the RECEIVE WHIP (J4) and REMOTE ANTENNA (J3) jacks, respectively, on radio patch-panel A1A2A4. Connecting cable W103 to either antenna jack patches the related rf signal to the input of preselector A1A3A9. The preselector connects through control lines and an rf cable to receiver A1A3A3. The preselector has narrow bandpass selectivity, which permits the receiver to operate in the presence of strong signals (200 V rms at 10 percent away from tuned frequency, or less voltage at closer frequencies). It also adds up to 6-dB gain to the received rf signal. The filtered rf output of the preselector goes to the input of the receiver. The receiver converts the received rf signal into up to four channels of audio signals. These output signals go through audio jackfield A1A1A2 to binding posts on signal entry panel A3, to receive audio inputs of control-monitor A1A3A5, or to shelter tty equipment patched into audio jackfield A1A1A2.

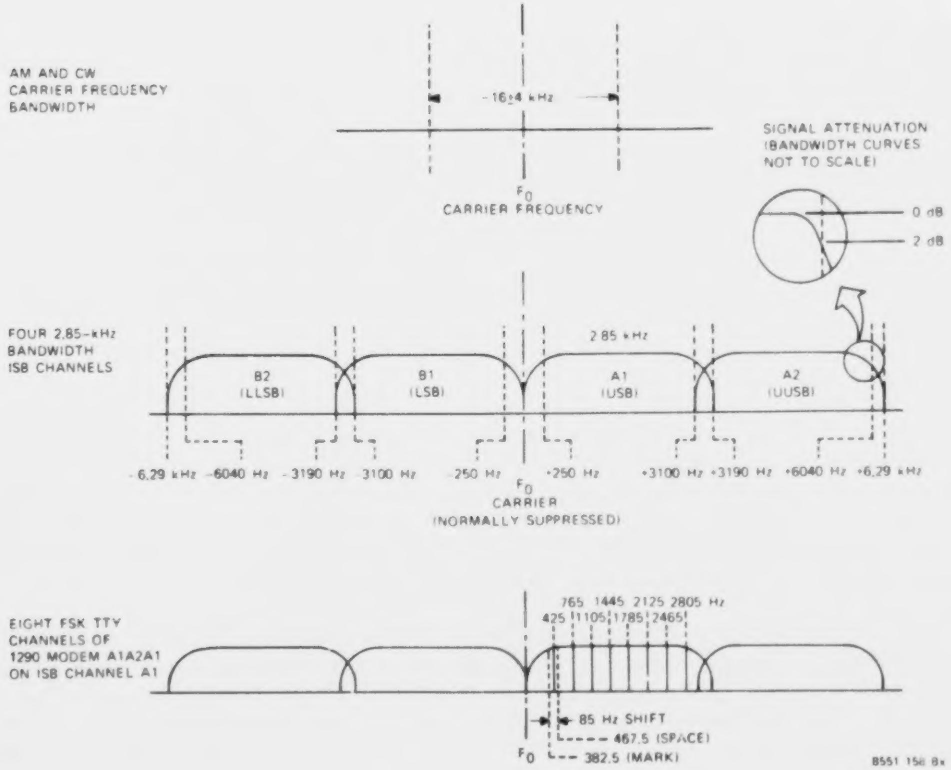
AM AND CW
CARRIER FREQUENCY
BANDWIDTH
-16±4 kHz
F0
CARRIER FREQUENCY
SIGNAL ATTENUATION
(BANDWIDTH CURVES
NOT TO SCALE)
0 dB
2 dB
FOUR 2.85-kHz
BANDWIDTH
ISB CHANNELS
2.85 kHz
B2
(LLSB)
B1
(LSB)
A1
(USB)
A2
(UUSB)
-6.29 kHz
-6040 Hz
-3190 Hz
-3100 Hz
-250 Hz
+250 Hz
+3100 Hz
+3190 Hz
+6040 Hz
+6.29 kHz
F0
CARRIER
(NORMALLY SUPPRESSED)
EIGHT FSK TTY
CHANNELS OF
1290 MODEM A1A2A1
ON ISB CHANNEL A1
765
1445
2125
2805 Hz
425
1105
1785
2465
85 Hz SHIFT
467.5 (SPACE)
382.5 (MARK)
F0
8551 156 8x

Figure 4-1. Radio Subsystem Frequency Spectrum

4-3.2.2. Transmit Function. Exciter A1A2A2 receives transmit audio inputs from external equipment connected to signal entry panel A3, from control-monitor A1A3A5, from shelter tty equipment patched into audio jackfield A1A1A2, or directly at its front panel MIC jack. The exciter converts the transmit audio input into an rf output for AM, CW, or 4-channel ISB transmission. The exciter also receives transmitter gain control (TGC) and automatic level control (ALC) signals from the power amplifier. The TGC signal controls the level of the rf output signal during system tuning; the ALC signal controls the rf output signal level during normal transmission. The rf output of the exciter goes to preselector A1A3A7, which filters noise and spurious signals from the exciter rf output and adds up to 6 dB of signal gain. The rf output of the preselector goes through cable W102 to radio patch-panel A1A2A4. The panel permits patching the preselector rf output to either local pa A1A4A3 or a remote pa. Connecting cable W102 to LOCAL PA/RF jack J1 supplies the preselector rf output to the local pa. Connecting the cable to REMOTE ANTENNA jack J3 supplies the rf to a remote pa through RECEIVE ANTENNA jack J8 on signal entry panel A3. For local pa operation, pa control information comes from the exciter through cable W236, which connects to LOCAL PA jack J5 on radio patch-panel A1A3A4. The pa amplifies the rf signal from preselector A1A3A7 to a 1-kW (maximum) pep/average signal. The pa supplies the rf output through TRANSMIT ANTENNA jack J7 on the signal entry panel to the rf input of antenna coupler A6. The pa also supplies control information through ANT COUPLER jack J11 on the signal entry panel to the coupler. The coupler supplies the rf signal to the transmit antenna and permits impedance-matching with the pa. When using a remote pa, pa control information comes from the exciter through cable W236 to REMOTE PA jack J6 on the radio patch-panel. The control information goes from the patch-panel jack to REMOTE PA binding posts on the signal entry panel.

4-3.2.3. Control Function. Receiver A1A3A3 and exciter A1A2A2 perform the major control functions of the radio subsystem. The receiver supplies control information to preselector A1A3A9; the exciter operates preselector A1A3A7. The exciter also supplies control information to a remote pa or to the local pa that operates antenna coupler A6. Front-panel controls on the receiver and exciter give local control. Control-monitor A1A3A5 permits remote control of either unit. When the control-monitor is used, the front panel controls on the receiver and the exciter are inoperative. The control-monitor transmits control information in RS-422 format to the receiver and exciter via the control bus. The receiver and exciter supply status information to the control-monitor via the monitor bus.

4-3.3. Tty Subsystem. The tty subsystem consists of Teletypewriter AN/UGC-74(V)3 (local tty A1A2A3), 1290 FSK modem A1A2A1, 1290 high-level interface A1A1A1, FSK modem A1A3A1, tone keyer/converter shelf 1 (A1A1A5) and shelf 2 (A1A1A6), and tty voltmeter panel A1A1A4. The subsystem has three major functions. It interfaces eight FSK subscriber lines to an ISB channel of the radio link; it interfaces the local tty on a ninth channel to a second ISB channel of the radio link; or it interfaces the local tty to an FSK subscriber line for point-to-point tty operations. The following paragraphs describe these functions.

4-3.3.1. Eight-Channel Interface. The 8-channel interface consists of 1290 FSK modem A1A2A1 and related signal conversion equipment (tone keyer/converter A1A1A5/A6 or high-level interface A1A1A1). The interface permits full-duplex operation as described below.

4-3.3.1.1. Transmit. The interface accepts FSK tones (1232-Hz mark, 1317-Hz space) or 60-mA neutral dc loop signals from subscriber equipment. For FSK operation, the subscriber lines connect to the TTY CONVERTER (AUDIO INPUT) binding posts on signal entry panel A3. The binding posts connect through the normalled-through TTY KEYER/CONVERTER IN jacks on audio jackfield A1A1A2 to the transmit inputs of converters in tone keyer/converter (shelf 1) A1A1A5 and (shelf 2) A1A1A6. The output of each converter is low-level polar (± 6 V dc) signals. The output line of each converter connects through the normalled-through TTY KEYER/CONVERTER OUT jacks on dc jackfield. A1A1A3 to the input of the related channel modulator in 1290 FSK modem A1A2A1. For neutral dc loop operation, subscriber lines connect to the TTY TRANSMIT (DC INPUT) binding posts on the signal entry panel. The binding posts connect directly to high-level interface A1A1A1, which converts the inputs to low-level polar (± 6 V dc) outputs. The output lines of the high-level interface dead-end at the 1290 HL TTY INTERFACE OUT LINE jacks on dc jackfield A1A1A3. Patchcords patch these jacks to the related channel modulators in the 1290 FSK modem. The modem output lines dead-end at the 1290 FSK COMPOSITE OUT LINE jacks on audio jackfield A1A1A2. The composite output signal is suitable for patching to the transmit input of any ISB channel of exciter A1A2A2. For a detailed description of the modem operation, refer to the related equipment manual listed in table 1-5.

4-3.3.1.2. Receive. Patchcords connect the ISB channel audio output of receiver A1A3A3 to the input of the 8-channel interface, the 1290 COMPOSITE IN LINE jacks on the audio jackfield. The jacks supply a composite FSK signal to 1290 FSK modem A1A2A1, which converts the signal into eight channels of low-level (±6 V dc) polar signals. The output of the modem drives either high-level interface A1A1A1 or keyer circuits of tone keyer/converter A1A1A5/A1A1A6. Without patching, the output lines of the modem connect through the normalled-through TTY KEYER/CONVERTER IN jacks on the dc jackfield to related-channel keyer circuits in tone keyer/converter shelf 1 and shelf 2. Each keyer circuit converts low-level polar output signals of the modem into FSK audio tones. The output of each keyer goes through normalled-through TTY KEYER/CONVERTER OUT jacks on the audio jackfield to the TTY KEYER (AUDIO OUTPUT) binding posts on the signal entry panel for application to external FSK audio equipment. Patching the 1290 HL TTY INTERFACE IN LINE jacks to the TTY KEYER/CONVERTER IN EQPT jacks on the dc jackfield connects the output of the modem to the high-level interface. The high-level interface converts low-level polar signals from the modem into dc-loop signaling. The high-level interface outputs go to TTY RECEIVE (DC OUTPUT) binding posts on the signal entry panel. For a detailed description of the keyer equipment or the high-level interface, refer to the related equipment manuals listed in table 1-5.

4-3.3.2. Local Tty Interface. The local tty interface consists of secure patch-panel A1A1A7 and FSK modem A1A3A1. The equipment interfaces local tty A1A2A3 to either an hf radio link or a subscriber line, as explained below.

4-3.3.2.1. Radio Link. The local tty send and receive lines connect to the secure patch panel, which permits patching the tty lines through secure equipment (see paragraph 4-3.1.3.). From the patch panel, the tty lines go through the normalled-through FSK MODEM jacks on dc jackfield A1A1A3 to FSK modem A1A3A1. The modem interfaces the send/receive (low-level polar signals) lines of the tty to the transmit/receive (FSK audio) lines of the radio link. The audio output of the modem goes to FSK MODEM 9 OUT EQPT jack J18 on the audio jackfield for patching to an ISB channel transmit input of exciter A1A2A2. The audio input of the modem goes to FSK MODEM 9 IN EQPT jack J19 on the audio jackfield for patching to an ISB channel receive output of receiver A1A3A3. Any channel of 1290 modem A1A2A1 can be substituted for FSK modem A1A3A1. The local tty send and receive lines are compatible with the low-level polar (dc) input/output lines of the 1290 modem. Patching at dc jackfield A1A1A3 gives this alternate radio link operation.

4-3.3.2.2. Subscriber Line. The local tty-to-subscriber line interface is the same as the radio link interface described above except for the audio line connections to the modem. The audio output line of the modem connects through the normalled-through FSK MODEM 9 OUT jack on the audio jackfield to the TTY KEYER (AUDIO OUTPUT) 9 binding post on the signal entry panel. The audio input line of the modem connects through the normalled-through FSK MODEM 9 IN jack to the TTY CONVERTER (AUDIO INPUT) 9 binding post on the signal entry panel. The binding posts connect subscriber audio lines through the modem to the local tty. Any channel of keyer/converter equipment in tty keyer/converter shelf A1A1A5 or A1A1A6 can be substituted for FSK modem A1A3A1. Patching at the jackfields bypasses the modem.

4-3.4. Telephone Subsystem. The telephone subsystem consists of Telephone Set TA-312/PT, Telephone Set TA-838/TT, audio jackfield A1A1A2, and signal entry panel A3. Telephone Set TA-312/PT connects through the normalled-through TA-312 TEL jack on the audio jackfield to the PHONE 2W binding posts on the signal entry panel. Telephone Set TA-838/TT connects through the normalled-through TA-838 TEL TX and RX jacks on the audio jackfield to the PHONE 4W XMT and 4W RCV binding posts on the signal entry panel. Refer to the related equipment manuals listed in table 1-5 for additional information.

4-3.5. Power Subsystem. Refer to the power distribution schematic diagram, figure FO-4. Power entry panel A2A6, power entry rack A2A5, and power distribution panel assembly A2A1 are the major components in the power subsystem. The following paragraphs describe their functions.

4-3.5.1. Power Entry Panel A2A6. An external power source supplies 120/208-V ac, 3-phase, 50/60- or 400-Hz power to MAIN POWER jack J1 on the power entry panel. (A placard on the power entry panel specifies the power frequency required by shelter environmental control unit (ECU) A4. The ECU can not be operated if the frequency of the external power source is not the same as specified on the placard.) GROUND terminal E4 is a common ac and dc ground point for the shelter. An external ground rod and cable connect the terminal to earth ground. From J1, phase A power goes to utility outlets circuit breaker CB1. The circuit breaker supplies 120 V ac to UTILITY OUTLETS J2 and J3. The 3-phase power from J1 goes to components within power entry rack A2A5.

4-3.5.2. Power Entry Rack A2A5. The 3-phase power from A2A6J1 passes through current-metering transformers T1, T2, and T3 to radio frequency interference (rfi) filters FL4, FL3, and FL2, and to lightning arrestors E1, E2, and E3. The neutral line from A2A6J1 connects to rfi filter FL1 and to the shelter ground. From the current-metering transformers, a sample of the 3-phase current goes to rfi filters FL5, FL6, and FL7. FL1 through FL7 and the shelter ground line connect to components within power distribution panel assembly A2A1.

4-3.5.3. Power Distribution Panel Assembly A2A1. Filtered, 3-phase power from filters FL4, FL3, and FL2 on rack A2A5 goes to meter fuses F1 through F3, to over- and under-voltage monitors K1 through K3, and to MAIN POWER circuit breaker CB1. Fuses F1 through F3 supply 3-phase power to one section of the 2-section METER SELECT wafer switch, S3. The wiper of this switch section connects the selected 3-phase line voltage to AC VOLTS meter M2. The second section of wafer switch S3 receives 3-phase current samples through fuses F4 through F6 from filters FL5 through FL7 of rack A2A5. The wiper of the second switch section connects selected 3-phase current samples to AC AMPERES meter M1. Frequency meters M3 and M4 connect in parallel between the switch side of fuse F1 and shelter ground, terminal 1 of A2TB1. The meters show the frequency of phase A power. Voltage monitors K1 through K3 monitor the voltage levels of phase A, phase B, and phase C power, respectively, to MAIN POWER circuit breaker CB1. When the voltage level of any phase drops to 105 V ac or rises to 132 V ac, the related monitor energizes a coil in CB1, which trips the circuit breaker. CB1 controls power to the remaining circuit breakers and fuses on the power distribution panel. The following paragraphs describe these components and the circuits they control.

4-3.5.3.1. ENVIRONMENTAL CONTROL UNIT Circuit Breaker CB2. Circuit breaker CB2 applies 3-phase power from CB1 through rfi filters FL1 through FL3 to environmental control unit A4. FL4 filters the neutral line from terminal 4 of A2A1TB1.

4-3.5.3.2. POWER AMPLIFIER Circuit Breaker CB3. Circuit breaker CB3 applies 3-phase power from CB1 to HF-8032 Power Supply A1A4A2. (The power supply supplies operating power to HF-8023 Power Amplifier A1A4A3.)

4-3.5.3.3. UTILITY OUTLETS Circuit Breaker CB4. Circuit breaker CB4 receives 120-V ac, phase B power from CB1. The power goes to the utility outlet mounted on the shelter left wall below the secure equipment.

4-3.5.3.4. LIGHTS Circuit Breaker CB5. Circuit breaker CB5 receives 120-V ac, phase-B power from CB1 and applies the power to LIGHTS switch S1. With S1 at ON, the power goes to BLACK-OUT OVERRIDE switch S2, which controls the operation of the shelter lighting ciruits. Setting S2 to BLACK-OUT OVERRIDE applies 120 V ac to the main lighting circuit and lights the white lamps of the three light assemblies. At ON, S2 applies 120 V ac to blackout door switch A2A7S1. With the shelter door open, the door switch applies 120 V ac through its normally closed terminal to the blackout lighting circuit, the blue lamp of light 1. With the shelter door closed, the door switch applies 120 V ac through its normally open terminal to the main lighting circuit.

4-3.5.3.5. CONT/RCVR/PRESEL Circuit Breaker CB6. Circuit breaker CB6 applies 120-V ac, phase-A power to terminal board A2TB4 of equipment rack A1. The terminal board distributes the power to receiver A1A3A3, to preselector A1A3A9, and to control-monitor A1A3A5.

4-3.5.3.6. EXCTR/PRESEL Circuit Breaker CB7. Circuit breaker CB7 applies 120-V ac, phase-C power to terminal board A2TB3 of equipment rack A1. The terminal board distributes the power to exciter A1A2A2 and to preselector A1A3A7.

4-3.5.3.7. 1290 MODEM/LOOP SUPPLY Circuit Breaker CB8. Circuit breaker CB8 applies 120-V ac, phase-A power to terminal board A2TB2 of equipment rack A1. The terminal board distributes power to 1290 FSK modem A1A2A1 and to loop power supply A1A1A9. The modem and the power supply distribute power to high-level interface A1A1A1.

4-3.5.3.8. TONE KEYER/CONV Circuit Breaker CB9. Circuit breaker CB9 applies 120-V ac, phase-B power to terminal board A2TB1 of equipment rack A1. The terminal board distributes power to FSK modem A1A3A1, tone keyer/converter (shelf 1) A1A1A5, and tone keyer/converter (shelf 2) A1A1A6.

4-3.5.3.9. KW-7/KWX-11 Circuit Breaker CB10. Circuit breaker CB10 applies 120-V ac, phase B power to terminal board TB3. The terminal board distributes the power to TSEC/KWX-11 A2A2A4, TSEC/KW-7 A2A2A3, and TSEC/KW-7 A2A2A2. The TSEC/KWX-11 supplies the ac line voltage to power supplies A2A1PS1 and A2A1PS2. The power supplies supply ±6 V dc to the TSEC/KWX-11.

4-3.5.3.10. TTY Circuit Breaker CB11. Circuit breaker CB11 supplies 120-V ac, phase C power through terminal board A1TB1 on equipment rack A1 to local tty A1A2A3.

4-3.5.3.11. SHELTER/PA FLUSHING BLOWERS Fuses F7 and F8. Indicator fuses F7 and F8 apply phase B and phase A power, repectively, to rfi filters FL1 and FL2 on blower assembly A5. The filters supply the 2-phase power through current-limiting resistors R1 and R2 to frequency converter A5PS1. The converter converts the 2-phase 50/60/400-Hz input to a 50/60/57-Hz, single-phase output. The output power goes through filters FL3 and FL4 to pa enclosure exhaust fans B7 through BL9 and to SHELTER FLUSHING FAN switch A5S1. At ON, switch A5S1 applies power to shelter flushing fans B1 through B6. Capacitors C1 through C3 correct the power factor of the converter output line and give a near-resistive load on the converter.

4-3.5.3.12. EQPT RACK FLUSHING BLOWERS FUSE F9. Indicator fuse F9 applies phase B power to equipment rack flushing fans A1A1B1, A1A2B1, and A1A3B1.

Section II. FUNCTIONAL OPERATION OF ELECTRONIC CIRCUITS

4-4. SCOPE. This section describes in detail the functions of equipment not covered in other equipment manuals.

4-5. VOLTMETER PANEL A1A1A4. VOLTS meter M1 is a ±12-volt, zero-center, dc voltmeter. The meter pointer deflects right when a positive voltage is applied to the positive terminal of the meter. This terminal connects the jack-tip terminal of INPUT jack J1. The negative terminal of the meter goes to the jack-ring terminal of J1.

4-6. SECURE PATCH-PANEL A1A1A7. The jack-tip and jack-ring terminals of METER INPUT jack J12 connect to the positive and negative terminals, respectively, of dc voltmeter M1. The meter circuit functions the same as the circuit on voltmeter panel A1A1A4, described above. Rear-panel connector J1 connects through external cabling to local tty A1A2A3. It supplies signals from the tty through pin-to-pin internal wiring to front-panel SECURE BYPASS connector J3. Internal wiring connects J3 to TD STEP-, RCV-, and SEND-EQPT jacks J7, J9, and J11, which are part of three twin-telephone, normalled-through jack assemblies. The LINE jacks of the assemblies connect to rear-panel connector J2. MON jacks J6, J8, and J10 connect in parallel with LINE jacks J7, J9, and J11, respectively. Jack J2 connects through external cabling to secure equipment, TSEC/KWX-11 A2A4. The secure bypass connector attached with a retaining cable to the front panel is a cross-connect plug. When installed on SECURE BYPASS connector J3, the plug connects tty send-, receive-, and TD step-signal pins of J3 to related SEND jack-, RCV jack-, and TD STEP jack-signal pins. Front panel SECURE connector J4 is hard-wired to a cable from TSEC/KWX-11 A2A4. In secure mode operation of the tty, J4 connects through a patchcord to front panel TTY/RADIO connector J5. J5 is hard-wired to a cable from dc jackfield A1A1A3. In nonsecure tty operation, J5 connects through a patchcord to connector J3.

4-7. RADIO PATCH-PANEL A1A2A4. The radio patch-panel consists of a front panel with six pendant cables. LOCAL PA/RF connector J1 is hard-wired to cable W104, which connects to rf input jack J1 on local pa A1A4A3. PA T/R RELAY connector J2 is hard-wired to cable W105, which connects to J3 on the pa. J2 permits connecting the rf input of receiver A1A3A3 to the transmit antenna through the pa simplex output. REMOTE ANTENNA connector J3 is hard-wired to cable W106, which goes to RECEIVE ANTENNA jack J8 on signal entry panel A3. J3 permits connecting the receiver to a remote antenna connected to A3J8, and also permits connecting the rf output of exciter A1A2A2 through A3J8 to a remote pa. RECEIVE WHIP connector J4 is hard-wired to cable W107, which supplies rf to J4 from the receive whip antenna mounted on blower assembly A5 . LOCAL PA connector J5 is hard-wired to cable W237, which connects to control-line connector J2 on the local pa. REMOTE PA connector J6 is hard-wired to cable W238, which connects to connector A3J5 on the signal entry panel. Cable W238 connects the pa control lines of the exciter to the REMOTE PA binding posts on the signal entry panel.

CHAPTER 5

MAINTENANCE

5-1. SCOPE. This chapter contains instructions for maintenance of Communication Central AN/TSC-60(V)7. Under the maintenance concept established for the communication central, organizational maintenance uses the communication central as a test bed. Because performance tests and adjustment procedures for the individual equipment items use the communication central as a signal and power source, this chapter includes maintenance information that would normally be in the related publications listed in table 1-5. Section I of this chapter contains system-level performance tests and adjustment procedures. System performance tests verify that system equipment is operating properly. Section II of this chapter contains the performance tests and adjustment procedures for the individual equipments. The performance tests in section II isolate faults to replaceable assemblies or circuit cards.

Section I. ORGANIZATIONAL MAINTENANCE

5-2. SCOPE. This section contains system-level performance standards and adjustment procedures. Perform the system-level performance tests and adjustments that apply at initial setup or when equipment in the system is changed.

5-3. TEST EQUIPMENT REQUIRED. Table 5-1 lists the test equipment required for maintenance procedures in this section. Equivalent test equipment may be substituted for that listed in the table.

5-4. TEST POINTS. Jacks in audio jackfield A1A1A2 and dc jackfield A1A1A3 serve as test points in system-level tests.

5-5. PERFORMANCE TESTS. The following paragraphs contain system-level performance tests for the AN/TSC-60(V)7. If the performance standards are not met, refer to section II of this chapter to further isolate the problem.

5-5.1. Tty Subsystem Performance Tests. System-level performance tests for the tty subsystem are in table 5-2. If the performance standards are not met, refer to the fault-isolation procedures in section II of this chapter. Perform these tests at initial setup or when equipment in the system is changed.

5-5.2. Radio Subsystem Performance Test. System-level performance tests for the radio subsystem are in tables 5-5 through 5-10. The pa multimeter on the pa displays readings of monitor points on the pa. The pa power supply voltmeter displays power supply voltage. If the performance standards are not met, refer to the performance tests in section II of this chapter.

5-6. ADJUSTMENT PROCEDURES. The following paragraphs contain system-level adjustment procedures for the AN/TSC-60(V)7.

WARNING

To prevent possible electrocution or personal injury, remove all conductive items (anything made of metal) from hands and arms before reaching into or working on electrical equipment.

Table 5-1. Test Equipment Required for System Maintenance

Type	FMSC	Nomenclature	Use
RF Signal Generator	28480	HP-8640B-001	Provides rf signals for testing the radio subsystem performance.
Transmission Test Set	28480	HP-3551A	Provides audio tones for testing the radio subsystem performance.
Coaxial Attenuator	28480	HP-8491A-006	Provides 6 dB of attenuation during radio subsystem performance tests.
RF Attenuator	70998	Bird 8329-300	Terminates pa output during performance tests.

Table 5-2. Tty Subsystem Performance Test

Test equipment required:

None

Preliminary instructions:

a. On power distribution panel A2A1, press TONE KEYER/CONV, TTY and 1290 MODEM LOOP SUPPLY circuit breakers in (on).

b. On all 1290 FSK modem modulators and demodulators, set COMP 1/COMP 2 switch to COMP 1 and NORM/REV switch to NORM.

c. On all 1290 FSK modem modulators, press all MUTE switches on (switch pressed in and green).

d. On all 1290 FSK modem demodulators, press all HOLD switches on (switch pressed in and blue).

e. On all TK-201F keyers, set mode switch to LINE.

f. On all TC-301F converters, set SIGNAL SENSE switch to —.

g. On 1290 FSK modem set POWER switch on.

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
		Keyer and converter check		
1			On secure patch panel A1A1A7, connect SECURE BYPASS jack to TTY/RADIO jack.	

Table 5-2. Tty Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
		1290 VFT system check-Continued		
2			On dc jackfield A1A1A3, patch FSK MODEM 9 IN-EQUIP jack J18 to TTY KEYER/CONVERTER 1 IN-LINE jack J25.	
3			On audio jackfield A1A1A3, patch TTY KEYER/CONVERTER 1 OUT-EQUIP jack J25 to TTY KEYER/ CONVERTER 1 IN-EQUIP jack J26.	
4			On dc jackfield A1A1A3, patch TTY KEYER/CONVERTER 1 OUT LINE jack J26 to FSK MODEM 9 OUT EQUIP jack J19.	
5			Type in and transmit a line of alternating R's and Y's on tty.	The tty prints out the same pattern of RY's typed in.
6			Disconnect all cable patches made in previous steps except those on secure patch panel.	
7			Repeat steps 2. through 6., using patching listed in table 5-3.	
		1290 VFT system check		
8			On dc jackfield A1A1A3, patch FSK MODEM 9 IN EQUIP jack J18 to 1290 HL TTY INTERFACE 1 IN LINE jack J1.	
9			On signal entry panel outside shelter, connect TTY TRANSMIT (DC INPUT) 1 binding posts to TTY RECEIVE (DC OUTPUT) 1 binding posts.	

Table 5-2. Tty Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
			Keyer and converter check-Continued	
10			On dc jackfield A1A1A3, patch 1290 HL TTY INTERFACE 1 OUT LINE jack J2 to TTY KEYER/CONVERTER 1 OUT EQUIP jack J26.	
11			On audio jackfield A1A1A2, patch 1290 COMPOSITE 1 OUT LINE jack J21 to 1290 COMPOSITE 1 IN LINE jack J22.	
12			On dc jackfield A1A1A3, patch TTY KEYER/CONVERTER 1 IN EQUIP jack J25 to FSK MODEM 9 OUT EQUIP jack (J19).	
13			On all 1290 FSK modem cards, set COMP 1 ISB/SSB switch to SSB.	
14			Type in and transmit a line of alternating R's and Y's on tty.	The tty prints out same pattern of RY's typed in.
15			Disconnect all cable patches made in previous steps except those on secure patch panel.	
16			Repeat steps 8. through 15., using the patching listed in table 5-4.	
			MPC-1000T/LCO modem test	
17			On MPC-1000T/LCO, set controls as follows: a. TONE KEYER to NORM b. Bandwidth to MEDIUM	

Table 5-2. Tty Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
			MPC-1000T/LCO modem test-Continued	
17 (Cont)			c. NORMAL/ REVERSE to NORMAL	
			d. AFSK/OFF to AFSK	
			e. DUPLEX to FULL	
			f. ON/STANDBY to ON	
			g. MODE to MO	
			h. AFSK to A	
			i. LEVEL control at 9 o'clock	
			j. THRESHOLD control at 12 o'clock	
			k. POWER to on.	
18			Set teletypewriter controls as follows:	
			a. PARITY to INHIB	
			b. STATE to KSR	
			c. REC MODE to LO DATA	
			d. XMIT MODE to LO DATA	
			e. BAUD RATE to 75	
			f. KG-30 CLOCK to INT	
			g. CLOCK to +	
			h. FIGURES to S	
			i. SIGNAL to NRZ	

Table 5-2. Tty Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
			MPC-1000T/LCO modem test-Continued	
18 (Cont)			j. STOP BITS to 2 k. MODE to BAUDOT.	
19			On secure patch panel, connect SECURE BYPASS jack to TTY/RADIO jack.	
20			On audio jackfield, patch FSK MODEM 9 OUT EQPT jack to FSK MODEM 9 IN EQPT jack.	
21			Adjust MARK LCO control on MPC-1000T/LCO for a maximum indication of horizontal bar on cross display.	
22			Set MODE switch on MPC-1000T/LCO to MS.	
23			Adjust SPACE LCO control on MPC-1000T/LCO for a maximum indication on the vertical bar on the cross display. Then turn control clockwise (cw) until center tuning square just appears with vertical bar at minimum indication.	
24			Type in and transmit a line of alternating R's and Y's on tty.	Tty prints out same pattern of RY's typed in.
25			Disconnect all patches and restore equipment to normal operating configuration.	

Table 5-3. Jackfield Patching for Tty Subsystem Performance Tests

Channel	Audio jackfield		DC jackfield	
	From	To	From	To
2	TTY KEYER/CONVERTER 2 OUT EQUIP (J27)	TTY KEYER/CONVERTER 2 IN EQUIP (J28)	FSK MODEM 9 IN EQUIP (J18)	TTY KEYER/CONVERTER 2 IN LINE (J27)
			TTY KEYER/CONVERTER 2 OUT LINE (J28)	FSK MODEM 9 OUT EQUIP (J19)
3	TTY KEYER/CONVERTER 3 OUT EQUIP (J29)	TTY KEYER/CONVERTER 3 IN EQUIP (J30)	FSK MODEM 9 IN EQUIP (J18)	TTY KEYER/CONVERTER 3 IN LINE (J29)
			TTY KEYER/CONVERTER 3 OUT LINE (J30)	FSK MODEM 9 OUT EQUIP (J19)
4	TTY KEYER/CONVERTER 4 OUT EQUIP (J31)	TTY KEYER/CONVERTER 4 IN EQUIP (J32)	FSK MODEM 9 IN EQUIP (J18)	TTY KEYER/CONVERTER 4 IN LINE (J31)
			TTY KEYER/CONVERTER 4 OUT LINE (J32)	FSK MODEM 9 OUT EQUIP (J19)
5	TTY KEYER/CONVERTER 5 OUT EQUIP (J33)	TTY KEYER/CONVERTER 5 IN EQUIP (J34)	FSK MODEM 9 IN EQUIP (J18)	TTY KEYER/CONVERTER 5 IN LINE (J33)
			TTY KEYER/CONVERTER 5 OUT LINE (J34)	FSK MODEM 9 OUT EQUIP (J19)
6	TTY KEYER/CONVERTER 6 OUT EQUIP (J34)	TTY KEYER/CONVERTER 6 IN EQUIP (J36)	FSK MODEM 9 IN EQUIP (J18)	TTY KEYER/CONVERTER 6 IN LINE (J35)
			TTY KEYER/CONVERTER 6 OUT LINE (J36)	FSK MODEM 9 OUT EQUIP (J19)
7	TTY KEYER/CONVERTER 7 OUT EQUIP (J37)	TTY KEYER/CONVERTER 7 IN EQUIP (J38)	FSK MODEM 9 IN EQUIP (J18)	TTY KEYER/CONVERTER 7 IN LINE (J37)
			TTY KEYER/CONVERTER 7 OUT LINE (J38)	FSK MODEM 9 OUT EQUIP (J19)

Table 5-3. Jackfield Patching for Tty Subsystem Performance Tests-Continued

Channel	Audio jackfield		DC jackfield	
	From	To	From	To
8	TTY KEYER/CONVERTER 8 OUT EQUIP (J39)	TTY KEYER/CONVERTER 8 IN EQUIP (J40)	FSK MODEM 9 IN EQUIP (J18)	TTY KEYER/CONVERTER 8 IN LINE (J39)
			TTY KEYER/CONVERTER 8 OUT LINE (J40)	FSK MODEM 9 OUT EQUIP (J19)

Table 5-4. Jackfield Patching for 1290 Modem Tty Subsystem Performance Test

Channel	Audio jackfield		DC jackfield		Signal entry panel	
	From	To	From	To	From	To
2	1290 COMPOSITE 1 OUT LINE	1290 COMPOSITE 1 IN LINE	FSK MODEM 9 IN EQUIP	1290 HL TTY INTERFACE 2 IN LINE	TTY TRANSMIT (DC INPUT) 2	TTY RECEIVE (DC OUTPUT) 2
			1290 HL TTY INTERFACE 2 OUT LINE	TTY KEYER/ CONVERTER 2 OUT EQUIP		
			TTY KEYER/ CONVERTER 2 IN EQUIP	FSK MODEM 9 OUT EQUIP		
3	1290 COMPOSITE 1 OUT LINE	1290 COMPOSITE 1 IN LINE	FSK MODEM 9 IN EQUIP	1290 HL TTY INTERFACE 3 IN LINE	TTY TRANSMIT (DC INPUT) 3	TTY RECEIVE (DC OUTPUT) 3
			1290 HL TTY INTERFACE 3 OUT LINE	TTY KEYER/ CONVERTER 3 OUT EQUIP		
			TTY KEYER/ CONVERTER 3 IN EQUIP	FSK MODEM 9 OUT EQUIP		
4	1290 COMPOSITE 1 OUT LINE	1290 COMPOSITE 1 IN LINE	FSK MODEM 9 IN EQUIP	1290 HL TTY INTERFACE 4 IN LINE	TTY TRANSMIT (DC INPUT) 4	TTY RECEIVE (DC OUTPUT) 4
			1290 HL TTY INTERFACE 4 OUT LINE	TTY KEYER/ CONVERTER 4 OUT EQUIP		
			TTY KEYER/ CONVERTER 4 IN EQUIP	FSK MODEM 9 OUT EQUIP		

Table 5-4. Jackfield Patching for 1290 Modem Tty Subsystem Performance Test-Continued

Channel	Audio jackfield		DC jackfield		Signal entry panel	
	From	To	From	To	From	To
5	1290 COMPOSITE 1 OUT LINE	1290 COMPOSITE 1 IN LINE	FSK MODEM 9 IN EQUIP	1290 HL TTY INTERFACE 5 IN LINE	TTY TRANSMIT (DC INPUT) 5	TTY RECEIVE (DC OUTPUT) 5
			1290 HL TTY INTERFACE 5 OUT LINE	TTY KEYER/ CONVERTER 5 OUT EQUIP		
			TTY KEYER/ CONVERTER 5 IN EQUIP	FSK MODEM 9 OUT EQUIP		
6	1290 COMPOSITE 1 OUT LINE	1290 COMPOSITE 1 IN LINE	FSK MODEM 9 IN EQUIP	1290 HL TTY INTERFACE 6 IN LINE	TTY TRANSMIT (DC INPUT) 6	TTY RECEIVE (DC OUTPUT) 6
			1290 HL TTY INTERFACE 6 OUT LINE	TTY KEYER/ CONVERTER 6 OUT EQUIP		
			TTY KEYER/ CONVERTER 6 IN EQUIP	FSK MODEM 9 OUT EQUIP		
7	1290 COMPOSITE 1 OUT LINE	1290 COMPOSITE 1 IN LINE	FSK MODEM 9 IN EQUIP	1290 HL TTY INTERFACE 7 IN LINE	TTY TRANSMIT (DC INPUT) 7	TTY RECEIVE (DC OUTPUT) 7
			1290 HL TTY INTERFACE 7 OUT LINE	TTY KEYER/ CONVERTER 7 OUT EQUIP		
			TTY KEYER/ CONVERTER 7 IN EQUIP	FSK MODEM 9 OUT EQUIP		
8	1290 COMPOSITE 1 OUT LINE	1290 COMPOSITE 1 IN LINE	FSK MODEM 9 IN EQUIP	1290 HL TTY INTERFACE 8 IN LINE	TTY TRANSMIT (DC INPUT) 8	TTY RECEIVE (DC OUTPUT) 8
			1290 HL TTY INTERFACE 8 OUT LINE	TTY KEYER/ CONVERTER 8 OUT EQUIP		
			TTY KEYER/ CONVERTER 8 IN EQUIP	FSK MODEM 9 OUT EQUIP		

Table 5-5. Receive Subsystem Performance Test

Test equipment required:

RF Signal Generator, HP-8640B-001	Coaxial Attenuator, 6 dB, HP-8491A-006
Transmission Test Set, HP-3551A	

NOTE

Equivalent test equipment may be substituted for test equipment listed.

Preliminary instructions:

a. On power distribution panel A2A1, press CONT/RCVR/PRESEL circuit breaker in (on).

b. On preselector A1A3A9 press POWER switch in (on).

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1			On radio patch-panel A1A2A4, move coax cable from RECEIVE WHIP jack to REMOTE ANTENNA jack.	
2	Connect signal generator through 6-dB attenuator to RECEIVE ANTENNA jack J8 on signal entry panel A3.			
3			On front panel of receiver, set controls as follows: a. CONT switch to LCL b. POWER switch to ON c. MODE switch to ISB d. CH A1 enable to ON; all other enables to OFF e. CH A1 AGC to OFF f. RF GAIN fully clockwise g. FREQUENCY KHZ to 02000.0.	

Table 5-5. Receive Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
4	Set signal generator frequency 1000 Hz above receiver frequency. Adjust signal generator output level to 1.0 microvolt.			
5	Connect receive terminal of transmission test set to A1 RX jack EQPT J8 on audio jackfield. Set transmission test set to measure receive level. Note the signal-plus-noise level shown on transmission set.			
6	Set output level of signal generator to 0 volt.			Transmission test set shows a noise level at least 10 dB down from signal-plus-noise level observed in step 5.
7			On receiver, set CH A1 AGC switch to DATA.	
8	Set output level of signal generator to 3.0 microvolt. Note audio output level shown on transmission test set for reference.			
9	Increase output of signal generator to 1-V rms.			Receiver AGC holds signal level indicated on transmission test set to not more than (NMT) 6 dB maximum above reference.
10	Repeat steps 3 through 9 for following receiver frequencies: 04000.0, 08000.0, 22000.0, and 29990.0 kHz.			
11			On front panel of receiver, set controls as follows: CH A2 enable to ON; all other enables to OFF	

Table 5-5. Receive Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
11 (Cont)			CH A2 AGC to OFF FREQUENCY KHZ to 02000.0.	
12	Set signal generator frequency 5290 Hz above receiver frequency. Adjust signal generator output level to 1.0 microvolt.			
13	Connect receive terminal of transmission test set to A2 RX EQPT jack on audio jackfield. Set transmission test set to measure receive level. Note the signal-plus-noise level shown on transmission test set.			
14	Set output level of signal generator to 0 volt.			Transmission test set shows a noise level at least 10 dB down from signal-plus-noise level observed in step 13.
15	Set output level of signal generator to 3.0 microvolt. Note audio output level shown on transmission test set for reference.		On receiver, set CH A2 AGC switch to DATA.	
16	Increase output of signal generator to 1-V rms.			Receiver AGC holds signal level shown on transmission test set to NMT 6 dB above reference.
17	Repeat steps 11 through 16 for following receiver frequencies: 04000.0, 08000.0, 22000.0, and 29990.0 kHz.			
18			On front panel of receiver, set controls as follows: CH B1 enable to ON; all other enables to OFF	

Table 5-5. Receive Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
18 (Cont)			CH B1 AGC to OFF FREQUENCY KHZ to 02000.0.	
19	Set signal generator frequency 1000-Hz below receiver frequency. Adjust signal generator output level to 1.0 microvolt.			
20	Connect receive terminal of transmission test set to B1 RX EQPT jack on audio jackfield. Set transmission test set to measure receive level. Note the signal-plus-noise level shown on transmission test set.			
21	Set output level of signal generator to 0 volt.			Transmission test set shows a noise level at least 10 dB down from signal-plus-noise level observed in step 20.
22	Set output level of signal generator to 3.0 microvolt. Note audio output level shown on transmission test set for reference.		On receiver, set CH B1 AGC switch to DATA.	
23	Increase output of signal generator to 1-V rms.			Receiver AGC holds signal level shown on transmission test set to NMT 6 dB above reference.
24	Repeat steps 18 through 23 for following receiver frequencies: 04000.0, 08000.0, 22000.0, and 29990.0 kHz.			
25			On front panel of receiver, set controls as follows: CH B2 enable to ON; all other enables to OFF	

Table 5-5. Receive Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
25 (cont)			CH B2 AGC to OFF FREQUENCY KHZ to 02000.0.	
26	Set signal generator frequency 5290 Hz below receiver frequency. Adjust signal generator output level to 1.0 microvolt.			
27	Connect receive terminal of transmission test set to B2 RX EQPT jack on audio jackfield. Set transmission test set to measure receive level. Note the signal-plus-noise level shown on transmission test set.			
28	Set output level of signal generator to 0 volt.			Transmisssion test set shows a noise level at least 10 dB down from signal-plus-noise level observed in step 27.
29	Set output level of signal generator to 3.0 microvolt. Note audio output level shown on transmission test set for reference.		On receiver, set CH B2 AGC switch to DATA.	
30	Increase output of signal generator to 1-V rms.			Receiver AGC holds signal level shown on transmission test set to NMT 6 dB above reference.
31	Repeat steps 25 through 30 for following receiver frequencies: 04000.0, 08000.0, 22000.0, and 29990.0 kHz.			
32	Disconnect signal generator from signal entry panel.			

Table 5-5. Receive Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
33			On receiver, set channel A1 enable to ON, SPEAKER switch to A1 and SQUELCH control fully counterclockwise (ccw). Then adjust SQUELCH control cw just out of detent.	
34			Set FREQUENCY-KHZ controls on receiver to 04000.00.	
35			Adjust AF GAIN control on receiver until noise can be heard in speaker.	
36			Rotate SQUELCH CONTROL clockwise about 45 degrees from fully ccw position.	Speaker output squelches after about 1 to 3 seconds.
37	Connect signal generator through 6-dB attenuator to RECEIVE ANTENNA jack J8 on signal entry panel A3.			
38	Set signal generator frequency 1000 Hz above receive frequency. Adjust signal generator output level to 10 microvolts.			Audio tone can be heard in receiver speaker.

Table 5-6. Transmitter Subsystem Performance Test

Test equipment required:

Transmission Test Set, HP-3551A	RF Attenuator, 2 kW, Bird 8329-300

Preliminary instructions:

a. On signal entry panel, connect jumper pin C to pin T on ANT COUPLER jack J1.

b. On radio patch panel, verify that cable W102 is connected to LOCAL PA/RF jack and cable W236 is connected to LOCAL PA jack.

c. Connect dummy load to TRANSMIT ANTENNA jack J7 on signal entry panel A3.

d. On power distribution panel A2A1, press EXCTR/PRESEL circuit breaker in (on) and set POWER AMPLIFIER switch to ON.

e. On preselector A1A3A7, press POWER switch in (on).

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1	On HF-8032 power supply, set all circuit breakers to ON.			
2			On exciter, set controls as follows: a. CONT to LCL b. KEY to NORM c. MODE to ISB d. PA PWR to OFF e. PILOT CARR to OFF f. A1 LINE-CHANNEL to ON. All other channel-enable switches to OFF.	
3			On HF-8023 pa, set LOCAL-REMOTE switch to REMOTE and multimeter select switch to FWD PWR.	

Table 5-6. Transmitter Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
4			On exciter, set PA PWR switch to STBY.	
5	Adjust transmission test set for a 0-dB mW, 1000-Hz output. Connect the send terminal of transmission test set to A1 TX EQUIP jack J8 on audio jackfield A1A1A2.			
6			On exciter, set FREQUENCY KHZ thumbwheels to 16000.0. Set PA PWR switch to LOW PWR and KEY switch to LOCK.	Multimeter on power amplifier shows 500 ±50 watts.
7			On exciter, set KEY switch to NORM. Then set PA PWR switch to HIGH and KEY to LOCK.	Multimeter on power amplifier shows 1000 ±100 watts.
8			Set exciter KEY switch to NORM and FREQUENCY KHZ thumbwheels to 14000.0.	
9			Set exciter KEY switch to LOCK.	On pa multimeter, observe readings for each position of multimeter select switch. Readings should be as listed in table 5-7.
10			Set exciter KEY switch to NORM.	
11			Connect send terminal of transmission test set to B1 TX EQUIP jack J4.	
12			On exciter, set B1 LINE-CHANNEL switch to LINE, all others to OFF.	
13	Adjust transmission test set for a 1000-Hz, 0-dB mW output.		On exciter, set KEY switch to LOCK.	Pa multimeter shows 1000 ±100 watts.

Table 5-6. Transmitter Subsystem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
14			Set KEY switch to NORM.	
15	Repeat steps 12 through 15 for channels A2 and B2.			
16	Disconnect all test equipment and restore equipment to normal operating configuration.			

Table 5-7. Power Amplifier Multimeter Display Readings

MULTIMETER select position	MULTIMETER indication
INPUT RF	NMT 2.20 V rms
DRIVER	NMT 8.1 A
PA MOD A	NMT 12.5 A
PA MOD B	NMT 12.5 A
PA MOD C	NMT 12.5 A
PA MOD D	NMT 12.5 A
TOTAL PA	NMT 50 A
FWD PWR	950 to 1000 W
REFLD PWR	NMT 20 W

Table 5-8. Transmitter/Receiver Back-to-Back Performance Test

Test equipment required:

Transmission Test Set, HP-3551A
RF Attenuator, 2 kW, Bird 8329-300

NOTE

Equivalent test equipment may be substituted for test equipment listed.

Preliminary instructions:

a. On signal entry panel, connect pin C to pin T on ANT COUPLER jack J1.

b. On radio patch panel, ensure that cable W102 is connected to LOCAL PA/RF jack and cable W236 is connected to LOCAL PA jack.

c. Connect dummy load to TRANSMIT ANTENNA jack R7 on signal entry panel.

d. On power distribution panel A2A1, press the following circuit breakers in (on):

CONT/RCVR/PRESEL
EXCTR/PRESEL
TONE/KEYER/CONV
TTY

e. On power distribution panel, set POWER AMPLIFIER switch to ON.

f. On preselectors A1A3A7 and A1A3A9, press POWER switch in (on).

g. On HF-8023 pa, set LOCAL/REMOTE switch to REMOTE.

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1	On HF-8032 power supply set all circuit breakers to ON.			
2	Connect cable W103 to PA T/R RELAY on radio patch panel.			
3			On exciter, set controls as follows: a. CONT to LCL b. KEY to NORM c. MODE to ISB d. PA PWR to OFF	

Table 5-8. Transmitter/Receiver Back-to-Back Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
3 (Cont)			e. PILOT CARR to OFF f. A1 LINE-CHANNEL switch to LINE. Set all other enable switches to OFF g. FREQUENCY KHZ to 14000.0 h. PWR switch on.	
4			On HF-8032 power supply set all circuit breakers to ON.	
5			On receiver, set controls as follows: a. CONT to LCL b. PWR to on c. MODE to ISB d. CH A1 to ON. CH A2, CH B1, and CH B2 switches to OFF e. CH A1 AGC switch to VOICE. CH A2, CH B1, and CH B2 AGC switches to OFF f. RF GAIN fully cw g. SQUELCH fully ccw h. FREQUENCY KHZ to 14000.0	
6			On exciter, set PA PWR switch to STBY.	

Table 5-8. Transmitter/Receiver Back-to-Back Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
7	Adjust output of transmission test set to 1000 Hz at a level of 0 dB mW. Patch send terminal of transmission test set to A1 TX EQUIP jack J7 on audio jackfield A1A1A2.			
8	Patch the receive terminal of transmission test set to A1 RX EQUIP jack J8 on audio jackfield A1A1A2.			
9			On exciter, set PA PWR switch to HIGH PWR and KEY switch to LOCK.	Transmission test set receiver shows a 1000 ± 2-Hz audio output for receiver. Verify that multimeter on pa shows not less than 840 watts forward power.
10	Disconnect receive terminal of transmission test set from audio jackfield.			
11			On receiver, set SPEAKER switch to A1.	Audio tone can be heard in receiver speaker.
12			On exciter, set KEY switch to NORM.	
13	Repeat steps 4 through 12 for channels B1, A2, and B2.			
14	Disconnect transmission test set from audio jackfield.			
15	Connect microphone to MIC connector on exciter.		On exciter, set A1 LINE-CHANNEL switch to LINE. Set all other enable switches to OFF.	
16			On receiver, set CH A1 switch to ON, CH A1 AGC switch to VOICE, and SPEAKER switch to A1.	

Table 5-8. Transmitter/Receiver Back-to-Back Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
17			On microphone, press and holt ptt switch.	
18			Talk into microphone and listen for audio at receiver speaker.	Audio can be heard in receiver speaker.
19			Release microphone ptt switch and disconnect microphone from exciter.	
20			On MPC-1000T/LCO, set controls as follows: a. TONE KEYER to NORM b. Bandwidth to MEDIUM c. NORMAL/ REVERSE to NORMAL d. AFSK/OFF to AFSK e. DUPLEX to FULL f. ON/STANDBY to ON g. MODE to MO h. AFSK to A i. LEVEL control at 9 o'clock j. THRESHOLD control at 12 o'clock	
21			Set teletypewriter controls as follows: a. PARITY to INHIB b. STATE to KSR	

Table 5-8. Transmitter/Receiver Back-to-Back Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
21 (Cont)			c. REC MODE to $\overline{\text{LO}}$ $\overline{\text{DATA}}$	
			d. XMIT MODE to $\overline{\text{LO}}$ $\overline{\text{DATA}}$	
			e. BAUD RATE to 75	
			f. KG-30 CLOCK to INT	
			g. CLOCK to +	
			h. FIGURES to S	
			i. SIGNAL to NRZ	
			j. STOP BITS to 2	
			k. MODE to BAUDOT.	
22			On secure patch panel, connect SECURE BYPASS jack to TTY/RADIO jack.	
23			On audio jackfield, patch FSK MODEM 9 OUT EQPT jack to FSK MODEM 9 IN EQPT jack.	
24			Adjust MARK LCO control on MPC-1000T/LCO for a maximum indication of horizontal bar on cross display.	
25			Set MODE switch on MPC-1000T/LCO to MS.	
26			Set SPACE LCO control on MPC-1000T/LCO for a maximum indication on vertical bar of the cross display; then turn control cw until center tuning square just appears, with vertical bar at minimum indication.	

Table 5-8. Transmitter/Receiver Back-to-Back Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
27			On exciter, set A1 LINE-CHANNEL switch to LINE.	
28			On audio jackfield, patch FSK MODEM 9 OUT EQUIP jack J18 to A1 TX EQUIP jack J7.	
29			On receiver, set CH A1 AGC switch to DATA.	
30			On audio jackfield, patch FSK MODEM 9 IN EQUIP jack J19 to A1 RX EQUIP jack J8.	
31			On exciter, set KEY switch to LOCK.	
32			With AN/UGC-74 in keyboard send/receive mode, type in a full line of alternating R's and Y's.	AN/UGC-74 prints out same pattern of RY's typed in
33			On exciter, set KEY switch to NORM.	
34	Disconnect all cables and test equipment.			

Table 5-9. Remote Control Performance Test

Test equipment required:

RF Attenuator, 2-kW, Bird 8329-300
RF Signal Generator, HP-8640B
Coaxial Attenuator, 6 dB, HP-8491A-006

NOTE

Equivalent test equipment may be substituted for test equipment listed.

Preliminary instructions:

a. On signal entry panel A3, connect jumper from pin C to pin T on ANT COUPLER jack J1.

b. Connect dummy load to TRANSMIT ANTENNA jack J7 on signal entry panel A3.

c. On radio patch panel, ensure that cable W102 is connected to LOCAL PA/RF jack and cable W236 is connected to LOCAL PA jack.

d. On power distribution panel A2A1, press CONT/RCVR/PRESEL and EXCTR/PRESEL circuit breakers in (on).

e. On preselectors A1A3A7 and A1A3A9, press POWER switch in (on).

f. On HF-8023 pa, set LOCAL/REMOTE switch to REMOTE.

g. On HF-8032 power supply, set all circuit breakers to ON.

h. On receiver and exciter, press PWR switch in (on).

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1	On radio patch panel A1A2A4, connect cable W103 to REMOTE ANTENNA connector.		On receiver, set CONT switch to REM.	
2			On exciter, set CONT switch to REM.	
3			On pa, set LOCAL-REMOTE switch to REMOTE.	
4	Connect signal generator, through 6-dB attenuator, to RECEIVE ANTENNA jack J8 on signal entry panel A3.			

Table 5-9. Remote Control Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
5			On remote control unit, operate controls as follows: a. CONTROL SELECT switch to RCVR 1. b. Press MODE-ISB to on. c. Press channel A1 ENABLE to ON, all other ENABLE switches to off. d. Press channel A1 VOICE AGC switch to on. e. Set A1-RCV MON/OFF/OPR switch to RCV MON. f. Set SPKR switch to ON. g. Set SQUELCH switch to OFF. h. Set FREQUENCY SELECT thumbwheels to 04.000. i. Press TUNE INIT switch.	
6	Set signal generator for 4.001-MHz output at 100 microvolts.			Audio tone can be heard from remote control speaker.
7			On remote control unit, operate controls as follows: a. Set CONTROL SELECT switch to XMTR 1.	

Table 5-9. Remote Control Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
7 (Cont)			b. Press LOCK KEY switch off. c. Press TRANSMITTER POWER LOW switch to on. d. Press MODE ISB switch. e. Press A1-ENABLE switch on with B2, B1, and A2 off. f. Set FREQUENCY SELECT thumbwheels to 04.0000. g. Press TUNE INIT switch. h. Set A1 RCV MON/OFF/OPR switch to OPR.	
8			Connect headset/ microphone to HDST/MIC connector on remote control unit.	
9			On remote control unit, press TRANSMITTER POWER HIGH switch to on. Press TUNE INIT switch.	PA RDY indicator on remote control lights.
10			Press key switch on headset/microphone.	SYS KEY indicator on remote control lights while key switch is pressed.
11			Press key switch while whistling or talking into microphone.	PA RF indicator on remote control lights.
12			Disconnect headset/ microphone from remote control unit.	
13	Disconnect all test equipment.			

Table 5-10. Antenna Coupler Operation Performance Test

Test equipment required:

Transmission Test Set, HP-3551A

Preliminary instructions:

a. On radio patch panel, ensure that cable W102 is connected to LOCAL PA/RF jack and cable W236 is connected to LOCAL PA jack.

b. On power distribution panel A2A1, press CONT/RCVR/PRESEL and EXCTR/PRESEL circuit breakers in (on).

c. On preselectors A1A3A7 and A1A3A9, press POWER switch in (on).

d. On power distribution panel, set POWER AMPLIFIER switch to ON.

e. On HF-8023 pa, set LOCAL/REMOTE switch to REMOTE.

f. On HF-8023 power supply, set all circuit breakers to ON.

g. On receiver and exciter, press PWR switch in (on).

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1			Ensure that cables are connected between signal entry panel and antenna coupler.	
2			On HF-8014A exciter, set controls as follows: a. CONT to LCL b. KEY to NORM c. MODE to ISB d. PA PWR to STBY e. PILOT CARR to OFF f. A1 LINE-CHANNEL switch to LINE g. FREQUENCY KHZ switches to 08000.0.	
3			On HF-8023 pa, set meter select switch to FWD PWR.	

Table 5-10. Antenna Coupler Operation Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
4	Connect send terminal of transmission test set to A1 TX EQPT jack on audio jackfield. Adjust transmission test set for an output of 0 dB mW at 1000 Hz.			
5			On exciter, set PA PWR switch to HIGH and KEY switch to LOCK. Note HF-8023 meter indication for forward power.	
6			On HF-8023, set meter select switch to REFLD PWR. Note HF-8023 meter indication for reflected power.	Locate intersection of reflected and forward power values on graph in figure 5-1. The intersection of two values should lie below 3.0 vswr line on the graph.
7			On exciter, set KEY switch to NORM.	
8			Repeat steps 5 through 7 for exciter frequencies of 16555.50, 02000.00, and 29999.90 kHz.	Same as step 6.
9	Disconnect all test equipment.			

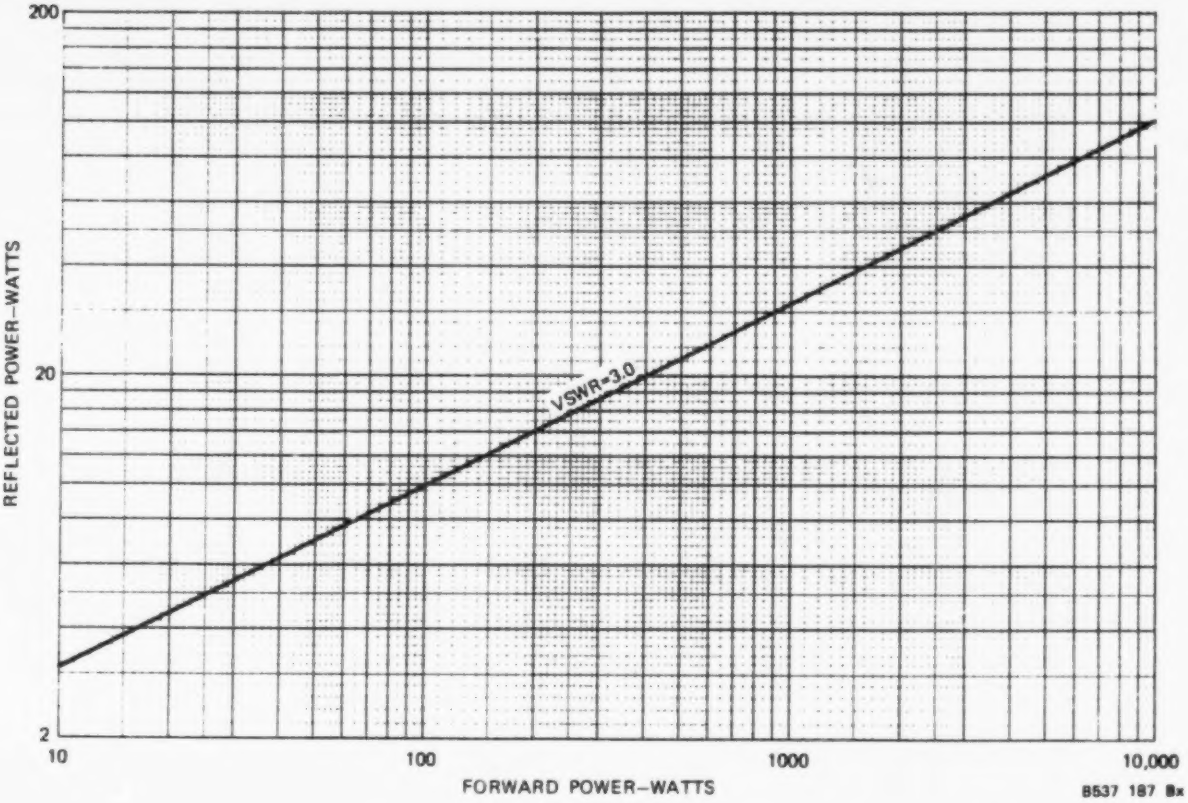

Figure 5-1. Antenna Coupler VSWR Locus Diagram

5-6.1. PA Tune Power, Low Power TGC, and ALC Adjustments.

a. On radio patch-panel, ensure that cable W102 is connected to LOCAL PA/RF jack J1.

b. On signal entry panel A3 connect dummy load to TRANSMIT ANTENNA jack J7 and jumper from Pin C to Pin T on ANT Coupler jack, J1.

c. Slide pa out from rack and remove top cover.

d. On exciter, set controls as follows:

CONT to LCL

KEY to NORM

MODE to CW

PA PWR to OFF

PILOT CARR to OFF

FREQUENCY kHz to 14000.0

e. Set pa controls as follows:

LOCAL/REMOTE to LOCAL

MANUAL/AUTO to MANUAL

PA KEY to OFF

PA POWER to LOW

Multimeter select to FWD PWR

f. On exciter, set KEY switch to LOCK. Press TUNE START switch on pa.

g. Press HF-8023 TUNE STEP ADVANCE switch until TUNE STEP indicator shows step 3. Set PA KEY switch to ON.

h. Meter on pa shows 200 watts. If not, adjust T PWR potentiometer (pot) A1A4R14 to limit power output to 200 watts as indicated on HF-8023 meter.

i. Press TUNE STEP ADV switch until TUNE STEP indicator shows step 4.

j. Adjust HF-8023 L TGC pot A1A4R16 until meter shows 250-watt forward power.

k. Press TUNE STEP ADVANCE switch until TUNE STEP indicator shows step 5.

l. Adjust HF-8023 L ALC pot A1A4R10 until meter shows 500-watt forward power.

m. Set HF-8023 PA KEY switch to OFF.

5-6.2. Power Amplifier High-Power Adjustments.

a. Perform steps a. through g. of paragraph 5-6.1, except in step e. set PA POWER switch to HIGH.

b. Press HF-8023 TUNE STEP ADVANCE switch until TUNE STEP indicator shows step 4.

c. Adjust HF-8023 H TGC pot A1A4R17 until meter shows 500-watt forward power.

d. Press TUNE STEP ADVANCE switch until TUNE STEP indicator shows step 5.

e. Adjust H ALC pot A1A4R7 until meter shows 980-watt forward power.

f. Set HF-8023 PA KEY switch to OFF.

g. Reinstall top cover on pa.

5-6.3. Subscriber Teletype Loop-Current Adjustment. Adjust loop current as follows after subscriber tty lines are connected to the system.

a. Ensure that 1290 MODEM/LOOP SUPPLY circuit breaker on power distribution panel is set to ON. Set POWER switch on 1290 modem to ON.

b. Patch LOOP MONITOR input jack (upper jack) on high-level interface meter panel to jack J1-S on high-level interface card for channel 1 (top section).

c. On 1290 FSK modem A1A2A1, enable HOLD switch on all demodulator cards (switch released, black indication).

d. Check to see if meter on high-level interface reads 60 ±6 mA. If not, adjust S pot on high-level interface card for channel 1 until meter reads 60 ±6 mA.

e. Repeat steps b. through d. for the remaining channels.

5-7. SYSTEM LEVEL INTERFACE ADJUSTMENTS. Table 5-11 lists the adjustments that change the system level of a single radio channel or of the entire AN/TSC-60(V)7. The system levels are initially set for 0 dB mW. Table 5-9 lists the adjustments that interface the AN/TSC-60(V)7 to equipment that requires some other input or output level. To receive voice at the 373J-1 Remote Control, adjust the 373J-1 receive amplifier level for the channel with the highest output level from the receiver. To transmit voice from the 373-1, adjust the 373J-1 transmit amplifier to match the lowest system channel interface level used. Since this transmit amplifier drives all four audio channels, this adjustment also lowers the audio output of the other channels.

5-7.1 System Level Interface Adjustment Chart. Table 5-11 lists the function to be adjusted, refers to the paragraph that contains detailed instructions for setting the system interface level to 0 dB mW, and lists the adjustment locations. The Original setting column lists the critical parameter in the procedure that dictates a system interface level of 0 dB mW. The Changed setting column indicates the value to which the test parameter must be changed to change the system interface level. Use the system level interface adjustment chart as follows:

a. Find the function to be changed on the chart.

b. Find the paragraph that contains the adjustment procedure.

c. Find the critical parameter in the adjustment procedure, as listed in the Original setting column.

d. Calculate the new value for the critical parameter from the formula listed in the Changed setting column, using the desired system interface level as the value of desired interface level (DIL). Example: Assume the desired system interface level is -5 dB mW and the channel A1 exciter input is to be adjusted. From the formula listed in the Changed setting column, the new value of the oscillator setting (the critical parameter) is 0 dB mW + DIL = 0 + (-5) = -5 dB mW.

Table 5-11. System Interface Level Adjustment Chart

Function	Paragraph no.	Adjustment location	Critical parameter	
			Original setting	Changed setting
		Exciter		
A1 audio input	5-10.4.5	A4R53	Oscillator to 0 dB mW	0 dB mW + DIL (desired interface level)
B1 audio input	5-10.4.6	A4R130	Oscillator to 0 dB mW	0 dB mW + DIL
A2 audio input	5-10.4.7	A3R53	Oscillator to 0 dB mW	0 dB mW + DIL
B2 Audio input	5-10.4.8	A33R130	Oscillator to 0 dB mW	0 dB mW + DIL

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SECTION II. EQUIPMENT ORGANIZATIONAL MAINTENANCE

5-8. SCOPE. This section contains the performance tests and adjustment procedures for individual equipment units that are part of Communication Central AN/TSC-60(V)7. For operation, detailed theory of operation, and circuit diagrams of the equipment units, refer to the related publication listed in table 1-5. Table 5-12 lists test equipment required for equipment organizational maintenance.

5-9. RADIO RECEIVER R-2222/TSC-60(V) (HF-8054A). The following paragraphs contain instructions for performance testing, alignment, and repair of the HF-8054A. These procedures isolate faults to a circuit card or group of cards.

WARNING

To avoid electrocution or personal injury, remove all conductive items (anything made of metal) from hands and arms before reaching into or working on electrical equipment.

CAUTION

Electrostatic discharge sensitive (ESDS) devices are in this assembly. Static electricity can damage these devices. Special handling methods and materials must be used to prevent damage. Do not touch or remove any ESDS device or any assembled circuit that has an ESDS device without properly grounding your body, test equipment, and all tools. Be thoroughly familiar with the handling procedures specified in T.O. 00-25-234.

Move or store assembled circuit boards only in conductive (antistatic) bags. Do not touch the printed circuits or the connector pins on the board; handle board by the edges only.

5-9.1. Test Points. Test points used in testing the HF-8054A are listed in table 5-13.

5-9.2. Performance Tests. Table 5-14 lists the test equipment required and the procedures for performance testing the HF-8054A. Perform all steps in table 5-14 in the order listed. Continue through the numbered steps until a malfunction is discovered or the test is complete. If the unit fails to meet a performance standard, troubleshoot the unit using the fault-isolation procedures in paragraph 5-9.3. Perform the performance tests periodically, as directed by the site maintenance supervisor. Between these periodic checks, perform the performance test after any repair or alignment.

5-9.3. Fault Isolation. The C-11070/TSC-60(V) Control-Monitor (373J-1) helps to isolate faults in the HF-8054A Receiver. Status indicators on the 373J-1 show failures in components of the HF-8054A. The 373J-1 should always be turned on when the system is in operation. The SUM FAULTS indicators on the 373J-1 light when a fault occurs in the radio. Use the 373J-1 CONTROL SELECT switch to select the component (RCVR or XMTR) fault being indicated by the SUM FAULTS indicator; the STATUS indicators on the 373J-1 (table 5-15) then light to indicate the possible source of the problem. If the 373J-1 cannot find the fault, perform the procedures in table 5-16 to isolate the fault. Perform the following procedures to isolate faults in the HF-8054A using the 373J-1.

a. The 373J-1 should always be turned on when the HF-8054A is operating. When the RCVR 1 SUM FAULTS indicator on the 373J-1 lights, set the CONTROL SELECT switch to RCVR 1. The STATUS indicators on the 373J-1 display status information for the HF-8054A.

b. Refer to table 5-15 for a list of the circuit card failures shown by the STATUS indicators. Locate the lighted STATUS indicators in the table and perform the actions listed for those indicators.

5-9.4. Alignment and Adjustment Procedures. The following paragraphs contain adjustment and alignment procedures for the HF-8054A Receiver.

Table 5-12. Test Equipment Required for Equipment Organizational Maintenance

Equipment identification	Characteristic
RF Signal Generator, HP-8640B-001	Frequency range: 500 kHz to 512 MHz
	Output: + 19 to -145 dB mW into 50 ohms
	Stability (after 2-hour warmup): Normal: <10 ppm/10 min
	Locked: <0.05 ppm/hr
Transmission Test Set, HP-3551A	Receiver Level measurements Frequency range: 40 Hz to 60 kHz Dynamic range: + 15 to -70 dB mW Accuracy: at 25°C ± 10°C, temperature coefficient; ± 0.005 dB/°C beyond this range.
	Frequency measurements Frequency Range: 40 Hz to 60 kHz Dynamic range: + 15 to -70 dB mW Accuracy: ± 1 count
	Transmitter Frequency range: 40 Hz to 60 kHz Accuracy: ± 1 count Level range: + 10 to -60 dB mW Resolution: 1 Hz (40 Hz to 10 kHz); 10 Hz (10 to 60 kHz)
Coaxial Attenuator, HP-8491A-006	Attenuation: 6 ± 0.4 dB
	Frequency range: dc to 12.4 GHz
	Maximum input power. 2 W average, 100 W peak

Table 5-12. Test Equipment Required for Equipment Organizational Maintenance-Continued

Equipment identification	Characteristic
Frequency Counter, HP-5335A	Input characteristics: Range: Dc coupled; 1 to 100 MHz Ac; 50 ohm, 200 kHz to 100 MHz Sensitivity: 25-mV rms sine wave 75- peak-to-peak pulse at minimum pulse width of 5 ns Signal operating range: -5 to +5 V dc Impedance: 1 megohm, nominal, shunted by <35 pf or 50-ohm nominal switchable
RF Voltmeter, Boonton 92C	Voltage range: 500 μV to 3 V (300 V up to 700 MHz with divider) Frequency range: 10 kHz to 1.2 GHz Basic accuracy: ±(1% reading +2% fs)
Digital Voltmeter, Fluke 8520A	Input: Ranges Resolution Resistance ± 10 V 100μV $>10^{10}$ ohm ± 100 V 1 mV 10 megohm ± 10000 V 10 mV 1 megohm
Storage Oscilloscope, Tektronix 464DM44-01	Input: 1 megohm ±2% paralleled by approximately 20 pf Maximum input voltage Dc coupled 250 V (dc + peak ac) 500 V (peak-to-peak ac at 1 kHz or less) Ac coupled 500 V (dc + peak ac) 500 V (peak-to-peak ac at 1 kHz or less) Stored writing speed: 110 div/μs Storage view time: >15s Sweep rate: 5 ns/div with 10x sweep magnifier Bandwidth: Dc to 100 MHz, -15° to +40°C Dc to 85 MHz, +40° to +55°C

Table 5-12. Test Equipment Required for Equipment Organizational Maintenance-Continued

Equipment identification	Characteristic
RF Attenuator, Bird 8329 - 300	Power rating: 2000 watts continuous duty Input vswr: 1.1 maximum, dc to 500 MHz Nominal attenuation: 30 dB Maximum frequency deviation: ± 1/2 dB, dc to 500 MHz Ambient air temperature range: -40° to +45°C (-40° to 113°F)
Microphone Impedance Matching Pad (local fabrication, figure 5-7)	Input: 600 ohm Output: 200 ohms

Table 5-13. HF-8054A Receiver Test Points

Test point	Location	Circuit function
TB1-7	Rear panel	Ground
TB1-8	Rear panel	Channel A1 AGC
TB1-9	Rear panel	Channel B1 AGC
TB2-7	Rear panel	Ground
TB2-8	Rear panel	Channel A2 AGC
TB2-9	Rear panel	Channel B2 AGC
A1TB1-1	Power supply A2	+24 V dc
A1TB1-2	Power supply A1	+18 V dc
A1TB1-3	Power supply A1	+15 V dc
A1TB1-5	Power supply A1	Ground
A1TB1-6	Power supply A1	-8 V dc

Table 5-13. HF-8054A Receiver Test Points-Continued

Test point	Location	Circuit function
A1TB1-7	Power supply A1	+5 V dc
A1TB1-8	Power supply A1	-15 V dc
J23	Rear panel	B2 if. out
J24	Rear panel	B1 if. out
J25	Rear panel	A1 if. out
J26	Rear panel	A2 if. out

Table 5-14. HF-8054A Receiver Performance Test

Test equipment required:

RF Signal Generator, HP-8640B-001
Coaxial Attenuator, HP-8491A-006
RF Voltmeter, Boonton 92C
Transmission Test Set, HP-3551A

NOTE

Equivalent test equipment may be substituted for that listed.

Preliminary instructions:

a. On power distribution panel, ensure that MAIN POWER circuit breaker is set to on and that CONT/RCVR/PRESEL circuit breaker is pressed in (on).

b. Remove four screws holding receiver in rack and slide receiver forward.

c. Disconnect cable from RF IN jack J22 on rear of receiver.

d. Set receiver front panel controls as follows:

CONT to LCL

MODE to ISB

CH A1 enable to ON

All other channel enables to OFF

FREQUENCY KHZ to 02000.0

All AGC switches to OFF

RF GAIN full cw

PWR to ON.

e. Set receiver FREQUENCY KHZ switches to 04000.0.

Table 5-14. HF-8054A Receiver Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1	Connect rf signal generator through 6-dB attenuator to RF IN jack J22 on rear of receiver.			
2	Connect receive terminal of transmission test set to A1 RX EQPT jack J8 on audio jackfield A1A1A2.			
3	Set signal generator for 4.001-MHz output at 0.9 µV.			Note signal-plus-noise level as observed on transmission test set.
4	Set signal generator output level to 0 V.			Transmission test set shows a noise level at least 10 dB below level observed in step 3.
5	Connect rf voltmeter (with a 50-ohm load) to J25 A1 IF OUT jack on rear panel of receiver.		On receiver, set CH A1 AGC switch to DATA.	
6	Adjust signal generator output level to 3 microvolts.			Transmission test set shows not less than (NLT) -3-dB mW audio output. Rf voltmeter indicates if. output of 15 to 30 mV.
7	Connect receive terminal of transmission test set to A2 RX EQPT jack on audio jackfield.		On receiver, set CH A1 to OFF and CH A2 to ON.	
8	Set signal generator for 4.00529 MHz, 3-µV output.			Note signal-plus-noise level on transmission test set.
9	Set signal generator output level to 0 V.			Transmission test set shows a noise level at least 10 dB below that of step 8.
10	Connect rf voltmeter with 50-ohm probe to J26 A2 IF OUT jack on rear panel of receiver.		On receiver, set CH A1 AGC switch to OFF and CH A2 AGC switch to DATA.	

Table 5-14. HF-8054A Receiver Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
11	Set signal generator output level to 3 μV.			Transmission test set shows NLT -3 dB mW receive audio. Rf voltmeter shows an if. output of 15 to 30 mV.
12	Connect receive terminal of transmission test set to B1 RX EQPT jack on audio jackfield.		On receiver, set CH A2 to OFF and CH B1 to ON.	
13	Set signal generator for 3.999 MHz, 3-μV output.			Note signal-plus-noise level on transmission test set.
14	Set signal generator output level to 0 V.			Transmission test set shows a noise level at least 10 dB below that of step 13.
15	Connect rf voltmeter with 50-ohm probe to J24 B1 IF OUT jack on rear panel of receiver.		On receiver, set CH A2 AGC switch to OFF and CH B1 AGC switch to DATA.	
16	Set signal generator output level to 3 μV.			Transmission test set shows NLT -3 dB mW receive audio. Rf voltmeter shows an if. output of 15 to 30 mV.
17	Connect receive terminal of transmission test set to B2 RX EQPT jack on audio jackfield.		On receiver, set CH B1 to OFF and CH B2 to ON.	
18	Set signal generator for 3.99471 MHz, 3-μV output.			Note signal-plus-noise level on transmission test set.
19	Set signal generator output level to 0 V.			Transmission test set shows a noise level at least 10 dB below that of step 18.
20	Connect rf voltmeter with 50-ohm probe to J23 B2 IF OUT jack on rear panel of receiver.		On receiver, set CH B1 AGC switch to OFF and CH B2 AGC switch to DATA.	

Table 5-14. HF-8054A Receiver Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
21	Set signal generator output level to 3 μV.			Transmission test set shows NLT -3 dB mW receive audio. Rf voltmeter shows an if. output of 15 to 30 mV.
22	Connect receive terminal of transmission test set to A1 RX EQPT jack J8 on audio jackfield A1A1A2.		On receiver, set CH B2 enable switch to OFF and CH A1 enable switch to ON. Set CH B2 AGC switch to OFF and CH A1 AGC switch to DATA.	
23	Set signal generator for 4.001 MHz, 3.0-μV output. Disconnect rf voltmeter from J25.			Note level indicated on transmission test set for reference.
24	Increase signal generator output level to 1 V rms.			Receiver AGC holds level of output signal observed on transmission test set to not more than (NMT) 6 dB above reference.
25	Reduce signal generator output level to 0 V.		Set receiver CH A1 enable switch to OFF and CH B1 enable switch to ON. Set CH B1 AGC switch to DATA.	
26	Move receive terminal of transmission set to B1 RX EQPT jack J5			
27	Set signal generator to 3.999 MHz at 3.0-μV output.		Set receiver FREQUENCY KHZ switches to 04000.0.	Note level indicated on transmission test set for reference
28	Increase signal generator output level to 1 V rms.			Receiver AGC holds level of output signal observed on transmission test set to NMT 6 dB above reference.
29	Reduce signal generator output level to 0 V.		Set receiver CH B1 enable switch to OFF and CH A2 enable switch to ON. Set CH A2 AGC switch to DATA.	

Table 5-14. HF-8054A Receiver Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
30	Move receive terminal of transmission test set to A2 RX EQPT jack J11			
31	Set signal generator for 4.00529 MHz, 3.0-µV output.		Set receiver FREQUENCY KHZ switches to 04000.0.	Note level indication on transmission test set for reference.
32	Increase signal generator output level to 1 V rms.			Receiver AGC holds level of output signal observed on transmission test set to NMT 6 dB above reference.
33	Reduce signal generator output level to 0 V.		Set receiver CH A2 enable switch to OFF and CH B2 enable switch to ON. Set CH B2 AGC switch to DATA.	
34	Move receive terminal of transmission test set to B2 RX EQPT jack J2.			
35	Set signal generator for 3.99471 MHz, 3.0-µV output.		Set receiver FREQUENCY KHZ switched to 04000.0.	Note level indicated on transmission test set for reference.
36	Increase signal generator output level to 1 V rms.			Receiver AGC holds level of output signal observed on transmission test set to NMT 6 dB above reference level.
37	Reduce signal generator output level to 0 V.			
38	Disconnect signal generator from J22 on receiver.		On receiver, set CH A1 enable to ON and all other channel enable switches to OFF. Set CH A1 AGC switch to DATA.	
39			On receiver, set SPEAKER switch to A1.	
40			On receiver, turn SQUELCH control fully ccw. Then turn SQUELCH control cw just out of detent.	

Table 5-14. HF-8054A Receiver Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
41			Adjust AF GAIN switch on receiver for audible signal.	Receiver speaker should not squelch on normal receiver noise.
42			On receiver, turn SQUELCH control about 45 degrees from off position.	Receiver speaker should squelch on receiver noise after 1 to 3 seconds.
43	Connect signal generator through 6-dB pad to RF IN jack J22 on rear of receiver. Set signal generator for 8.001-MHz, 0-V output.		Set FREQUENCY KHZ switches on receiver to 08000.0.	
44	Increase signal generator output level to 10 μV.			Receiver speaker should break squelch and audio tone should be heard in speaker.
45	Disconnect rf signal generator from J22			After 1- to 3-second delay, speaker output should squelch on noise only.
46			Turn receiver SQUELCH control fully cw.	
47			Set receiver controls as follows: MODE to CW BANDWIDTH to 16 FREQUENCY KHZ to 02000.0 CH A1 AGC to DATA.	
48	Connect signal generator (without 6-dB pad) to RF IN jack J22 on receiver. Set signal generator for 2.001-MHz output at 0 V.			
49	Increase signal generator output level until RCV OVERLOAD indicator on receiver lights.			Signal generator output level is NLT 2.5 V rms.

Table 5-14. HF-8054A Receiver Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
50	Disconnect signal generator from J22			RCV OVERLOAD indicator goes off.
51	Disconnect all test equipment from receiver		Reconnect cable in equipment rack to RF IN jack J22 on receiver. Restore equipment to normal operating configuration.	

Table 5-15. Receiver Fault Indications on 373J-1

STATUS indicator	Action
SYNTH	Check to see which of following indicators are lit: 100HZ FLT, 1 FLT, 10KHZ FLT or 100KHZ FLT
100HZ FLT	Replace synthesizer end decade card A19.
1KHZ FLT	Replace synthesizer 1-kHz decade card A20.
10KHZ FLT	Replace synthesizer 10-kHz decade card A21
100KHZ FLT	Replace synthesizer 100-kHz decade card A22.
FREQ FLT	Replace synthesizer reference card A16.
SUBCR FLT	Replace synthesizer subcarrier generator A15.
PS FLT	Replace power supply A1.

Table 5-16. HF-8054A Receiver Fault Isolation Test

Test equipment required:

Transmission Test Set, HP-3551A	RF Voltmeter, Boonton 92C
RF Signal Generator, HP-8640B-001	Coaxial Attenuator, HP-8491A-006

Preliminary instructions:

a. Remove screws holding receiver in rack and slide receiver forward.

b Disconnect rf input cable from RF IN jack J22 on rear of receiver.

c. On power distribution panel, ensure that MAIN POWER circuit breaker is set to on and CONT/RCVR/PRESEL circuit breaker is pressed in (on).

d. Connect signal generator through 6-dB attenuator to RF IN jack J22.

e. Remove top and bottom chassis covers from receiver.

f. Set front-panel controls of receiver as follows:

CONT to LCL

MODE to AM

BANDWIDTH to 16

FREQUENCY KHZ to 02000.00

CH A1 AGC to DATA; CH A2, B1, B2 to OFF

RF GAIN fully clockwise

Step	Procedure	Normal indication	If indication is abnormal
	Power supply check		
1	Press PWR switch on receiver to ON. Set FREQUENCY KHZ switches to 04000.00.		
2	Measure dc voltages between following points and ground (A1TB1-5):		Check power supply A1 and check for shorts on output voltage lines.
	A1TB1-1	+24 ±1.0 V dc	
	A1TB1-2	+18 ±1.0 V dc	
	A1TB1-3	+15 ±1.0 V dc	
	A1TB1-6	+8 ±1.0 V dc	
	A1TB1-7	+5 ±0.5 V dc	
	A1TB1-8	-15 ±1.0 V dc	

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
		Sensitivity check	
3	On receiver, set MODE switch to ISB and CH A1 enable switch to ON. Set all other channel enable switches to OFF, and set CH A1 AGC to OFF.		
4	Connect receive terminal of transmission test set to A1 RX EQPT jack J8 on audio jackfield. Set transmission test set to measure receive level.		
5	Set signal generator frequency 1000 Hz above receiver frequency. Adjust signal generator output level to 1.0 microvolt. Note signal-plus-noise level on transmission test set.		
6	Set output level of signal generator to 0 V.	Transmission test shows noise level at least 10 dB below that of step 5.	Check rf translator A9 and channel A1 if. card A8.
7	Repeat steps 5 and 6 for following receiver frequencies: 8000.0 kHz 16000.0 kHz 2999.0 kHz.		
8	a. Set receiver CH A1 enable to OFF and CH B1 enable to ON. Set FREQUENCY KHZ switches to 04000.00.		
	b. Connect receive terminal of transmission test set to B1 RX EQPT jack J5 on audio jackfield.		
	c. Set signal generator for receiver frequency minus 1000-Hz output at 1.0μV. Note signal-plus-noise level on transmission test set.		
	d. Set output level of signal generator to 0 V.	Transmission test set shows a noise level at least 10 dB below that of step 8c.	Check rf translator A9 and channel B1 if. card A7.

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Sensivity check-Continued		
9	Repeat steps 8c. and 8d. at the following receiver frequencies: 8000.0 kHz 16000.0 kHz 29990.0 kHz.		
10	a. Set receiver CH B1 enable to OFF and CH A2 enable to ON. Set FREQUENCY KHZ switches to 04000.0.		
	b. Connect receive terminal of transmission test set to A2 RX EQPT jack J11 on audio jackfield.		
	c. Set signal generator for receiver frequency plus 5290-Hz output at 1.0 µV. Note signal-plus-noise level as observed on transmission test set.		
	d. Set output level of signal generator to 0 V.	Transmission test set shows a noise level at least 10 dB below that of step 10c.	Check rf translator A9 and channel A2 if. card A6.
11	Repeat steps 10c. and 10d. at the following receiver frequencies: 8000.0 kHz 16000.0 kHz 299990.0 kHz 29990.0 kHz.		
12	a. Set receiver CH A2 enable to OFF and CH B2 enable to ON. Set FREQUENCY KHZ switches to 04000.0.		
	b. Connect receive terminal of transmission test set to B2 RX EQPT jack J2 on audio jackfield.		

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Sensivity check-Continued		
12 (Cont)	c. Set signal generator for receiver frequency minus 5290 Hz at 1.0 μV. Note signal-plus-noise level as observed on transmission test set.		
	d. Set output level of signal generator to 0 V	Transmission test set shows a noise level at least 10 dB below that of step 12c.	Check rf translator A9 and channel B2 if. card A5.
13	Repeat steps 13c. and 13d. at following receiver frequencies: 8000.0 kHz 16000.0 kHz 29990.0 kHz.		
	Gain check		
14	a. On receiver, set CH A1 enable switch to ON and all other channel enables to OFF. Set all AGC switches to DATA.		
	b. Connect receive terminal of transmission test set to A1 RX EQPT jack J8 on audio jackfield.		
	c. Connect rf voltmeter with 50-ohm probe to A1 IF OUT jack J25 on rear of receiver.		
	d. Set receiver FREQUENCY KHZ switches to 04000.00 kHz		
	e. Adjust signal generator frequency to receiver frequency plus 1000 Hz at 3 μV.	Transmission test set shows NLT -3 dB mW. Rf voltmeter shows 15 to 30 mV.	Check channel A1 if. card A8 receive audio card A25, and rf translator A9.
15	Repeat steps 14d. and 14e. at the following receiver frequencies: 08000.0 kHz 16000.0 kHz 29990.0 kHz.		

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Gain check-Continued		
16	a. Connect receive terminal of transmission test set to B1 RX EQPT jack J5 on audio jackfield.		
	b. Connect rf voltmeter with 50-ohm probe to B1 IF OUT jack J24 on rear panel of receiver.		
	c. On receiver, set CH B1 enable to ON. Set all other channel enables to OFF. Set FREQUENCY KHZ switches to 04000.0.		
	d. Adjust signal generator frequency to receiver frequency minus 1000 Hz at 3 μV.	Transmission test set shows NLT -3 dB mW. Rf voltmeter shows 15 to 30 mV.	Check channel B1 if. card A7, receive audio card A25, and rf translator A9.
17	Repeat steps 16c. and 16d. at following frequencies: 08000.0 kHz 16000.0 kHz 29990.0 kHz.		
18	a. Connect receive terminal of transmission test set to A2 RX EQPT jack J11 on audio jackfield.		
	b. Connect rf voltmeter with 50-ohm probe to A2 IF OUT jack J26 on rear of receiver.		
	c. On receiver, set CH B1 enable to ON. Set FREQUENCY KHZ switches to 04000.0.		
	d. Adjust signal generator frequency to receiver frequency plus 5290 Hz at 3 μV.	Transmission test set shows NLT -3 dB mW. Rf voltmeter shows 15 to 30 mV.	Check channel A2 if. card A6, receive audio card A26, and rf translator A9.
19	Repeat steps 18c. and 18d. at following receiver frequencies: 08000.0 kHz 16000.0 kHz 29990.0 kHz.		

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Gain check-Continued		
20	a. Connect receive terminal of transmission test set to B2 RX EQPT jack J2 on audio jackfield.		
	b. Connect rf voltmeter with 50-ohm probe to B2 IF OUT jack J23 on rear panel of receiver.		
	c. On receiver, set CH A2 enable to OFF and CH B2 enable to ON. Set FREQUENCY KHZ switches to 04000.0.		
	d. Adjust signal generator frequency to receiver frequency minus 5290 Hz at 3 µV.	Transmission test set shows NLT -3dB mW. Rf voltmeter shows 15 to 30 mV.	Check channel B2 if. card A5, receive audio card A26, and rf translator A9.
21	Repeat steps 20c. and 20d. at the following receiver frequencies: 08000.0 kHz 16000.0 kHz 29990.0 kHz.		
22	Disconnect rf voltmeter from receiver.		
	Squelch check		
23	On receiver, set switches as follows: MODE to ISB CH A1 enable to ON All other channel enables to OFF All AGC switches to DATA SPEAKER switch to A1 FREQUENCY KHZ to 04000.0.		
24	Disconnect signal generator from RF IN jack on rear of receiver.		
25	On receiver, turn SQUELCH control fully ccw. Then turn SQUELCH control cw just out of detent.		

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Squelch check-Continued		
26	Adjust AF GAIN control on receiver for audible signal.	Receiver speaker does not squelch on normal receiver noise.	Check receive audio card A25.
27	On receiver, slowly turn SQUELCH control to about 45 degrees from off position.	Speaker output squelches on noise only after 1 to 3 seconds.	Check receive audio card A25.
28	Connect signal generator through 6-dB attenuator to RF IN jack J22 on rear of receiver.		
29	Set FREQUENCY KHZ switches on receiver to 08000.0.		
30	Set signal generator to 8.001 MHZ at 0 V.		
31	Increase signal generator output level to 10 µV.	Receiver speaker breaks squelch and audio tone is in speaker.	
32	Disconnect rf signal generator from RF IN jack on receiver.	After 1- to 3-second delay, speaker output squelches on noise only.	
33	Turn SQUELCH control fully ccw.		
	AGC check		
34	a. On receiver, set CH A1 enable switch to ON and all other channel enable switches to OFF. Set all AGC switches to DATA and FREQUENCY KHZ switches to 4000.0 kHz.		
	b. Connect receive terminal of transmission test set to A1 RX EQPT jack J8 on audio jackfield.		
	c. Set signal generator for 4.0001 MHz, 3-µV output. Note audio output level on transmission test set for reference.		
	d. Increase rf signal input in 10-dB steps from 3 µV to 1 V rms.	Transmission test set shows increase in audio level up to NMT 6 dB above reference.	Check channel A1 if. card A8 and rf translator A9.

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	AGC check-Continued		
35	a. On receiver, set CH B1 enable switch to ON and all other channel enable switches to OFF. Set all AGC switches to DATA and FREQUENCY KHZ switches to 04000.0		
	b. Connect receive terminal of transmission test set to B1 RX EQPT jack J5 on audio jackfield.		
	c. Set signal generator for 3.999 MHz, 3-μV output. Note audio output level on transmission test set for reference.	Reference	
	d. Increase signal generator output in 10-dB steps from 3 μV to 1 V rms.	Transmission test set shows gradual increase in audio level up to NMT 6 dB above reference.	Check channel B1 if. card A7 and rf translator A9.
36	a. On receiver, set CH A2 enable switch to ON and all other channel enable switches to OFF. Set all AGC switches to DATA and FREQUENCY KHZ switches to 04000.0.		
	b. Connect receive terminal of transmission test set to A2 RX EQPT jack J11 on audio jackfield.		
	c. Set signal generator for 4.005290 MHz, 3-μV output. Note audio output level on transmission test set for reference.		
	d. Increase signal generator output in 10-dB steps from 3 μV to 1 V rms.	Transmission test set shows gradual increase in audio level up to NMT 6 dB above reference.	Check channel A2 if. card A6 and rf translator A9.
37	a. On receiver, set CH B2 enable switch to ON and all other channel enable switches to OFF. Set all AGC switches to DATA and FREQUENCY KHZ switches to 04000.0.		

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	AGC check-Continued		
37 (Cont)	b. Connect receive terminal of transmission test set to B2 RX EQPT jack J2 on audio jackfield.		
	c. Set signal generator for 3.99471 MHz, 3-μV output. Note audio output level on transmission test set for reference.	Reference.	
	d. Increase signal generator output in 10-dB steps from 3 μV to 1 V rms.	Transmission test set shows gradual increase in audio level up to NMT 6 dB above reference.	Check channel B2 if. card A5 and rf translator A9.
	Bandwidth check		
38	On receiver, set CH A1 enable switch to ON and all other channel enables to OFF. Set CH A1 AGC to OFF and FREQUENCY KHZ switches to 04000.0 kHz.		
39	Connect receive terminal of transmission test set to A1 RX EQPT jack J8 on audio jackfield.		
40	Set signal generator connected to RF IN jack for 4-MHz output at 1 μV.		
41	Adjust signal generator frequency above and below 4 MHz to locate peak indication on transmission test set. Note peak level for reference in following steps.		
42	Increase signal generator frequency until transmission test set shows level 3 dB below level in step 41.	Signal generator frequency is NLT 4.0031 MHz.	Check channel A1 if. card A8.
43	Decrease signal generator frequency until transmission test set shows a level 3 dB below that of step 41.	Signal generator frequency is NMT 4.00025 MHz.	Check channel A1 if. card A8.
44	Connect receive terminal of transmission test set to B1 RX EQPT jack J5 on audio jackfield.		
45	On receiver, set CH A1 enable to OFF, CH B1 enable to ON, and CH B1 AGC to OFF.		

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Bandwidth check-Continued		
46	Set signal generator for 3.999-MHz, 1-µV output		
47	Adjust signal generator above and below 3.999 MHz to locate peak indication on transmission test set. Note peak level for reference in following steps.		
48	Increase signal generator frequency until transmission test set shows a level 3 dB below that of step 47.	Signal generator frequency is NLT 3.99975 MHz.	Check channel B1 if. card A7.
49	Decrease signal generator frequency transmission test set shows a level 3 dB below that of step 47.	Signal generator frequency is NMT 3.9969 MHz.	Check channel B1 if. card A7.
50	Connect receive terminal of transmission test set to A2 RX EQPT jack J11 on audio jackfield.		
51	On receiver, set CH B1 enable to OFF, CH A2 enable to ON, and CH A2 AGC to OFF.		
52	Set signal generator for 4.005-MHz, 1-µV output.		
53	Adjust signal generator above and below 4.005 MHz to locate peak indication on transmission test set. Note peak level for reference in following steps.		
54	Increase signal generator frequency until transmission test set shows a level 3 dB below that of step 53.	Signal generator frequency is NLT 4.00604 MHz.	Check channel A2 if. card A6
55	Decrease signal generator frequency until transmission test set shows a level 3 dB below that of step 53.	Signal generator frequency is NMT 4.00319 MHz.	Check channel A2 if. card A6.
56	Connect receive terminal of transmission test set to B2 RX EQPT jack J2 on audio jackfield.		
57	On receiver, set CH A2 enable to OFF. CH B2 enable to ON, and CH B2 AGC to OFF.		
58	Set signal generator for 3.995-MHz, 1-µV output.		

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Bandwidth check-Continued		
59	Adjust signal generator above and below 3.995 MHz to locate peak indication on transmission test set. Note peak level for reference in following steps		
60	Increase signal generator frequency until transmission test set shows a level 3 dB below that of step 59.	Signal generator frequency is NMT 3.99681 MHz.	Check channel B2 if. card A5.
61	Decrease signal generator frequency until transmission test set shows a level 3 dB below that of step 59.	Signal generator frequency is NMT 3.99396 MHz.	Check channel B2 if. card A5.
62	Disconnect transmission test set.		
	Remote control check		
63	Set receiver controls as follows: MODE switch to ISB CH A1 enable to ON All other channel enables to OFF CH A1-AGC to DATA RF GAIN fully cw FREQUENCY KHZ to 02000.00 CONT to LCL.	No fault indicators are on. ISB and A1 indicators are on.	Check control card A10 and switch mounting board A2A2
64	Set remote control unit controls as follows: ON/OFF switch to ON CONTROL SELECT switch to RCVR 1.		
65	On remote control unit, press following switches while observing receiver status and mode displays. MODE switch CHANNEL CONTROL-ENABLE switches AGC switches	Pressing remote control unit switches has no effect on receiver status and mode displays.	Check parallel input card A11, parallel output card A12, and serial interface card A13.

Table 5-16. HF-8054A Receiver Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Remote control check-Continued		
66	On receiver, set CONT switch to REM.		
67	On remote contol unit, press MODE ISB and CHANNEL CONTROL ENABLE A1 switches.	ISB and A1 indicators on receiver light.	Check parallel input card A11, parallel output card A12, and serial interface card A13.
68	Change settings of following receiver controls: MODE switch AGC switches FREQUENCY KHZ controls.	Changing receiver controls has no effect on receiver status displays.	Check control card A10 and switch mounting board A2A2.
69	Set remote control FREQUENCY MHZ switches to 08.0000 and press TUNE INIT switch.	Receiver display shows setting of remote control unit frequency switches.	Check parallel input card A11, parallel output card A12, and serial interface card A13.
70	Turn off remote control unit. Set receiver CONT switch to LCL.		
71	Re-install top and bottom covers on receiver.		

5-9.4.1. Meter Adjustment. The following paragraphs contain procedures for adjusting the meter circuits. Perform these procedures only if the meter circuit has been repaired and/or the associated circuit card has been replaced. If an associated circuit card is replaced, perform only the adjustments for that card.

5-9.4.1.1. Channel A1 Receive Audio Meter Adjustment.

a. Press receiver PWR switch to off. Using card extender, extend receive audio card A25.

b. Connect transmission test set receive terminal to A1 RX EQP jack J8 on audio jackfield.

c. Connect oscilloscope to transmissionn test set receive terminal.

d. Set receiver controls as follows:

METER switch to A1 AF

MODE to ISB

CH A1 enable to ON

CH A1 AGC-BUS to OFF

CH-A1-AGC to OFF

RF GAIN to midrange

PWR to ON.

e. Connect rf signal generator to RF IN jack J22. Adjust signal generator output to 8.001 MHz.

f. Set receiver FREQUENCY KHZ switches to 08000.00.

g. Adjust rf signal generator output until transmission test set indicates + 10 dB mW. (Use RF GAIN control to adjust for an undistorted + 10-dB mW audio signal as observed on oscilloscope.)

h. Adjust A25R43 (figure 5-2) on receive audio card A25 for + 10-dB mW reading on front panel meter.

i. Turn power off and remove receive audio card from extender.

5-9.4.1.2. Channel B1 Receive Audio Meter Adjustment.

a. Press receiver PWR switch to OFF. Using card extender, extend receive audio card A25.

b. Connect transmission test set receive terminal to B1 RX EQPT jack J5 on audio jackfield.

c. Connect oscilloscope to transmission test set receive terminal.

d. Set receiver controls as follows:

METER switch to B1 AF

MODE to ISB

CH B1 enable to ON

CH B1-AGC BUS to OFF

CH B1-AGC to OFF

RF GAIN to midrange

PWR to ON.

e. Connect rf signal generator to RF IN jack J22. Adjust signal generator output to 7.999 MHz.

f. Set receiver FREQUENCY KHZ switches to 08000.00.

g. Adjust rf signal generator output until transmission test set shows + 10 dB mW. (Use RF GAIN control to adjust for an undistorted + 10-dB mW audio signal as observed on oscilloscope.)

h. Adjust A25R80 (figure 5-2) on receive audio card for + 10-dB mW reading on front-panel meter.

i. Turn power off and remove audio card from extender.

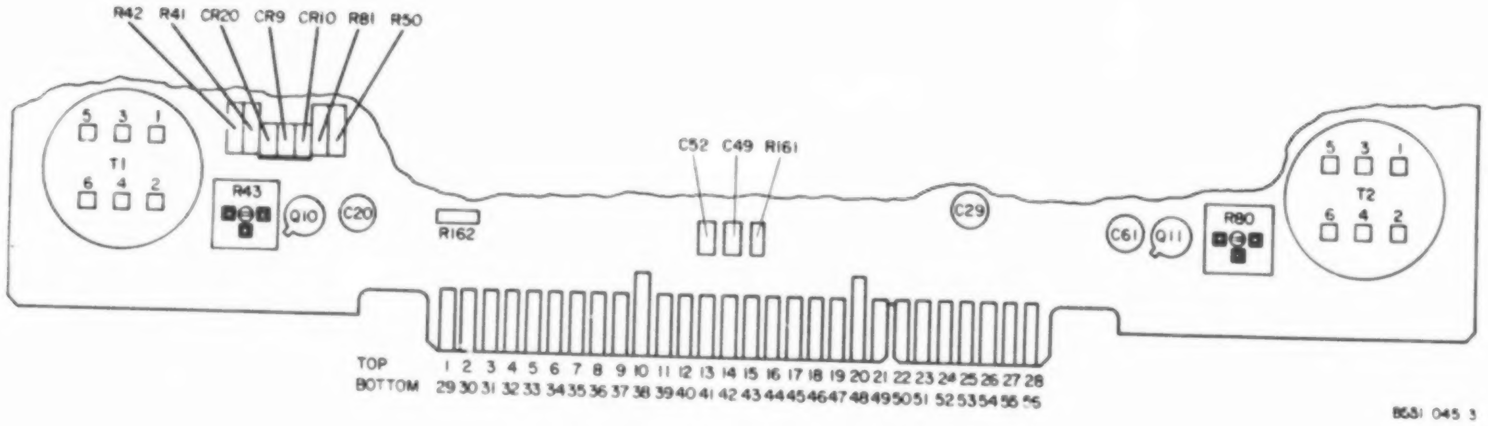
R42
R41
CR20
CR9
CR10
R81
R50
T1
5
3
1
6
4
2
R43
Q10
C20
R162
C52
C49
R161
C29
C61
Q11
R80
T2
5
3
1
6
4
2
TOP
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
BOTTOM
29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56
8581 045 3

Figure 5-2. Receive Audio Card A25/A26, Location of Adjustments

5-9.4.1.3. Channel A2 Receive Audio Meter Adjustment.

a. Press receiver PWR switch to OFF. Using card extender, extend receive audio card A26.

b. Connect transmission test set receive terminal to A2 RX EQPT jack J11 on audio jackfield.

c. Connect oscilloscope to transmission test set receive terminal.

d. Set receiver controls as follows:

CONT to LCL

METER switch to A2 AF

MODE to ISB

CH A2 enable to ON

CH A2-AGC BUS to OFF

CH A2-AGC to OFF

RF GAIN to midrange

PWR to ON.

e. Connect rf signal generator to RF IN jack J22. Adjust signal generator output to 8.00529 MHz.

f. Set receiver FREQUENCY KHZ switches to 08000.00.

g. Adjust rf signal generator output until transmission test set indicates + 10 dB mW. (Use RF GAIN control to adjust for an undistorted + 10-dB mW audio signal as observed on oscilloscope.)

h. Adjust A26R43 (figure 5-2) on receive audio card for + 10-dB mW reading on front panel meter.

i. Turn power off and remove audio card from extender.

5-9.4.1.4. Channel B2 Receive Audio Meter Adjustment.

a. Press receiver PWR switch to OFF. Using card extender, extend receive audio card A26.

b. Connect transmission test set receive terminal to B2 RX EQPT jack J2 on audio jackfield.

c. Connect oscilloscope to receive terminal of transmission test set.

d. Set receiver controls as follows:

METER switch to B2 AF

MODE to ISB

CH B2 enable to ON

CH B2-AGC BUS to OFF

CH B2-AGC to OFF

RF GAIN to midrange

PWR to ON.

e. Connect rf signal generator to RF IN jack J22. Adjust signal generator output to 7.99497 MHz.

f. Set receiver FREQUENCY KHZ switches to 08000.00.

g. Adjust rf signal generator output until transmission test set indicates + 10 dB mW. (Use RF GAIN control to adjust for an undistorted + 10-dB mW audio signal as observed on oscilloscope.)

h. Adjust A26R80 (figure 5-2) on receive audio card for + 10-dB mW reading on front panel meter.

i. Turn power off and remove audio card from extender.

5-9.4.1.5. Receive Signal Meter Adjustment.

a. Press receiver POWER switch to OFF. Using card extender, extend channel A1 if. card A8.

b. Set receiver controls as follows:

METER switch to RCV SIG

MODE to ISB

CH A1 enable to ON

CH A1-AGC BUS to OFF

CH A1-AGC to OFF

PWR to ON.

c. Connect digital voltmeter to TB1-8 on rear panel of receiver.

d. Adjust receiver RF GAIN control to obtain +4.0 ±0.05-V dc indication on voltmeter.

e. Adjust R120 on channel A1 if. card A8 (figure 5-3) for 80-dB reading on front panel meter.

f. Turn power off and remove channel A1 if. card from extender.

5-9.4.2. Channel A1 Receive Line Adjustment. Adjust channel A1 receive line audio as follows:

a. Set METER switch to A1 AF.

b. Set MODE switch to ISB.

c. Set CH A1 enable switch to ON, CH A1-AGC BUS switch to OFF, CH A1 AGC switch to VOICE, and FREQUENCY KHZ switches to 08000.0.

d. Set RF GAIN control fully clockwise.

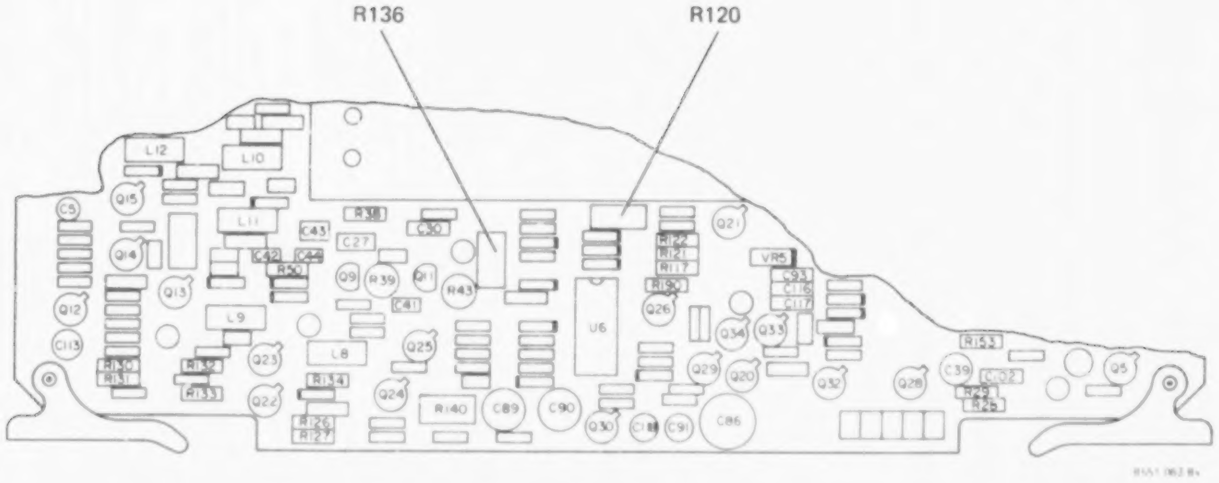

Figure 5-3. HF-8054A Channel A1 IF Card A8, Location of Adjustments

e. Connect rf signal generator output to RF IN jack J22. Adjust signal generator output to 8.001 MHz at 3 μV.

f. Adjust CH A1 RCV LINE ADJ A25R28 (figure 5-4) for 0 dB mW as shown on receiver front panel meter.

5-9.4.3. Channel B1 Receive Line Adjustment. Adjust channel B1 receive line audio as follows:

a. Set METER switch to B1 AF.

b. Set MODE switch to ISB.

c. Set CH B1 enable switch to ON, CH B1-AGC BUS switch to OFF, CH B1-AGC switch to VOICE, and FREQUENCY KHZ switches to 08000.0.

d. Set RF GAIN control fully clockwise.

e. Connect rf signal generator to RF IN jack J22. Adjust signal generator output to 7.999 MHz at 3 μV.

f. Adjust CH B1 RCV LINE ADJ A25R65 (figure 5-4) for 0 dB mW as shown on receiver front panel meter.

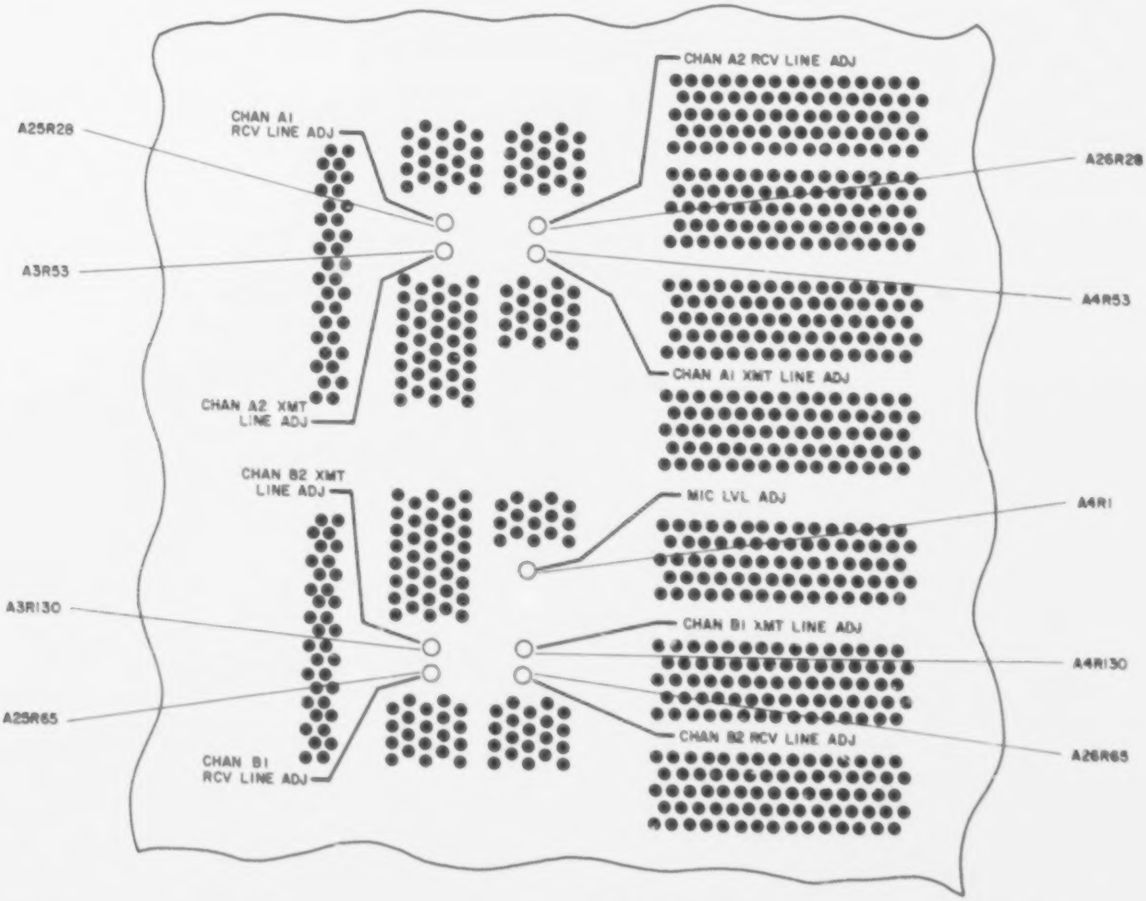
CHAN A2 RCV LINE ADJ
A25R28
CHAN A1 RCV LINE ADJ
A26R28
A3R53
A4R53
CHAN A1 XMT LINE ADJ
CHAN A2 XMT LINE ADJ
CHAN B2 XMT LINE ADJ
MIC LVL ADJ
A4R1
A3R130
CHAN B1 XMT LINE ADJ
A4R130
A25R65
CHAN B2 RCV LINE ADJ
A26R65
CHAN B1 RCV LINE ADJ
8851 064 3

Figure 5-4. HF-8054A Top Cover Adjustments

5-9.4.4. Channel A2 Receive Line Adjustment. Adjust channel A2 receive line audio as follows:

a. Set METER switch to A2 AF.

b. Set MODE switch to ISB.

c. Set CH A2 enable switch to ON, CH B1-AGC BUS switch to OFF, CH B1-AGC switch to VOICE, and FREQUENCY KHZ switches to 08000.0.

d. Set RF GAIN fully clockwise.

e. Connect rf signal generator to RF IN jack J22. Adjust signal generator output to 8.00529 MHz at 3 µV.

f. Adjust CH A2 RCV LINE ADJ A26R28 (figure 5-4) for 0 dB mW as shown on receiver front panel meter.

5-9.4.5. Channel B2 Receive Line Adjustment. Adjust channel B2 receive line audio as follows:

a. Set METER switch to B2 AF.

b. Set MODE switch to ISB.

c. Set CH B2 enable to ON, CH B2-AGC BUS switch to OFF, CH B1 AGC switch to VOICE, and FREQUENCY KHZ switches to 08000.0.

d. Set RF GAIN control fully clockwise.

e. Connect rf signal generator to RF IN jack J22. Adjust signal generator output to 7.99471 MHz at 3 µV.

f. Adjust CH B2 RCV LINE ADJ A26R65 (figure 5-4) for 0 dB mW as shown on receiver front-panel meter.

5-9.5. Removal and Replacement of HF-8054A Subassemblies and Chassis-Mounted Components. The following paragraphs contain instructions for removing and replacing assemblies where the procedures are not obvious.

WARNING

Lethal voltages are present in receiver with power switch turned off and primary power still connected. Do not attempt disassembly or assembly of the unit with primary power connected.

CAUTION

Electrostatic discharge sensitive (ESDS) devices are used in this assembly. Static electricity can damage these devices. Special handling methods and materials must be used to prevent damage. Do not touch or remove an ESDS device or any assembled circuit that has an ESDS device without properly grounding your body, test equipment, and all tools. Be thoroughly familiar with the handling procedures specified in T.O. 00-25-234. Move or store assembled circuit boards only in conductive (antistatic) bags. Do not touch the printed circuits or the connector pins on the board; handle the board by the edges only.

5-9.5.1. Disassembly. The following paragraphs contain procedures for removal of subassemblies and chassis-mounted components from the HF-8054A where the procedures are not obvious. Disconnect power plug before performing any of these procedures.

NOTE

Retain hardware removed during disassembly for use in reassembly. Refer to parts list in T.O.31S1-2TSC60-201 as an aid in disassembly.

5-9.5.1.1. Meter Lamp Removal/Replacement.

a. Grasp spring-loaded white terminal block and pull block away from back of meter until lamps are clear. Turn block 90 degrees and gently release.

b. Remove and replace meter lamps.

c. Grasp spring-loaded white terminal block and carefully turn the block back to its original position.

5-9.5.1.2. LED Status Display A2A1 Removal.

a. Remove unit top cover.

b. Remove front panel from unit by removing four hexhead screws and attaching hardware.

c. Remove four Phillips-head screws that secure LED status display to hexposts/front panel.

d. Disconnect plug P5 from LED status display jack A2J3.

e. Carefully pull LED status display from front-panel position (pull straight back).

5-9.5.1.3. Switch Mounting Board A2A2 Removal.

a. Remove unit top cover.

b. Remove front panel from unit by removing four hexhead screws and attaching hardware.

CAUTION

Upper overlay panel (plexiglas) is brittle; handle it carefully.

c. Remove upper overlay panel from front panel as follows:

(1) Remove four Phillips-head screws and lockwashers that secure back of front panel to upper edge bar.

(2) Remove four Phillips-head screws and lockwashers that secure back of front panel to panel support (middle bar on front panel).

(3) Lift upper edge bar from front panel.

(4) Carefully remove upper overlay panel.

d. Remove lower overlay panel from front panel as follows:

(1) Remove all knobs from front panel switches and controls.

(2) Remove four Phillips-head screws and lockwashers that secure back of front panel to lower edge bar.

(3) Lift lower edge bar from front panel.

(4) Remove lower overlay panel.

e. Remove attaching hardware from all switches, controls, and connectors on the front panel.

f. Disconnect plugs P3 and P4 from switch mounting board jacks A2J2 and A2J1, respectively.

g. Remove switch mounting board by removing three Phillips-head screws and attaching hardware (screwheads on front of front panel). Be careful not to damage wiring of wire-mounted controls and connectors.

5-9.5.1.4. Frequency Display A2A5 Removal.

a. Remove unit top cover.

b. Remove four Phillips-head screws and attaching hardware.

c. Disconnect plug P8 from jack A2J5 on frequency display.

d. Carefully pull frequency display from front-panel position.

5-9.5.1.5. Frequency Switchboard A2A3 Removal.

a. Remove unit top cover.

b. Remove frequency display A2A5 per paragraph 5-9.5.1.4.

c. Remove front panel from unit by removing four hexhead screws and attaching hardware.

CAUTION

Upper overlay panel (plexiglas) is brittle; handle it carefully.

d. Remove upper overlay panel from front panel as follows:

(1) Remove four Phillips-head screws and lockwashers that secure back of front panel to upper edge bar.

(2) Remove four Phillips-head screws and lockwashers that secure back of front panel to panel support (middle bar on front panel).

(3) Lift upper edge bar from front panel.

(4) Carefully remove upper overlay panel.

e. Remove cover plate on back of the front panel by removing five Phillips-head screws and attaching hardware (screwheads on front of front panel).

f. Disconnect plug P2 from frequency switchboard jack A2J4.

g. Remove frequency switchboard by removing four Phillips-head screws and attaching hardware (screwheads on front of front panel).

5-9.5.1.6. Speaker Removal.

a. Remove unit top cover.

b. Remove front panel from unit by removing four hexhead screws and attaching hardware.

CAUTION

Upper overlay panel (plexiglas) is brittle; handle it carefully.

c. Remove upper overlay panel from front panel as follows:

  (1) Remove four Phillips-head screws and lockwashers that secure back of front panel to upper edge bar.

  (2) Remove four Phillips-head screws and lockwashers that secure back of front panel to panel support (middle bar on front panel).

  (3) Lift upper edge bar from front panel.

  (4) Carefully remove upper overlay panel.

d. Remove speaker overlay panel from front panel as follows:

  (1) Remove all knobs from front panel switches and controls.

  (2) Remove four Phillips-head screws and lockwashers that secure back of front panel to lower edge bar.

  (3) Lift lower edge bar from front panel.

  (4) Remove speaker overlay panel.

e. Disconnect jack J47 from speaker plug A2P2.

f. Remove speaker by removing four Phillips-head screws and attaching hardware (screwheads on front of front panel).

5-9.5.2. Assembly. The following paragraphs contain procedures for replacement of subassemblies and chassis-mounted components into the HF-8054A where the procedures are not obvious.

5-9.5.2.1. LED Status Display A2A1 Installation.

CAUTION

LED status display must be correctly positioned and pushed straight into front panel slot to prevent damage to equipment.

a. Carefully push LED status display into front panel.

b. Secure LED status display to hexposts and front panel, using four Phillips-head screws.

c. Plug P5 into LED status display jack A2J3.

d. Install front panel to unit, using four hexhead screws and attaching hardware.

e. Install unit top cover.

5-9.5.2.2. Switch Mounting Board A2A2 Installation.

a. Carefully attach mounting board to front panel, using three Phillips-head screws and attaching hardware (screwheads on front of front panel). Be careful not to damage wiring of wire-mounted controls and connectors.

b. Install the necessary attaching hardware on all front-panel switches, controls, and connectors.

c. Mount panel support (middle bar on front panel) to front panel by using four Phillips-head screws and lockwashers.

d. Slide lower overlay panel and speaker overlay panel into slot of middle bar on front panel.

e. Carefully install lower edge bar and secure to front panel by using four Phillips-head screws and lockwashers.

CAUTION

Upper overlay panel (plexiglas) is brittle; handle it carefully.

f. Carefully install upper overlay panel into slot of middle bar on front panel.

g. Carefully install upper edge bar and secure to front panel by using four Phillips-head screws and lockwashers.

h. Install all knobs on front panel switches and controls.

i. Plug P3 and P4 into mounting board jacks A2J2 and A2J1, respectively.

j. Attach front panel to unit, using four hexhead screws and attaching hardware.

k. Install unit top cover.

5-9.5.2.3. Frequency Display A2A5 Installation.

a. Carefully slide frequency display into place in front panel.

b. Connect plug P8 to jack A2J5 on frequency display.

c. Secure frequency display, using four Phillips-head screws and attaching hardware.

d. Install unit top cover.

5-9.5.2.4. Frequency Switchboard A2A3 Installation.

a. Install frequency switchboard in front panel, using four Phillips-head screws (screwheads on front of front panel).

b. Attach cover plate to back of front panel, using five Phillips-head screws and attaching hardware (screwheads on front of front panel).

c. Mount panel support (middle bar on front panel) to front panel by using four Phillips-head screws and lockwashers.

CAUTION

Upper overlay panel (plexiglas) is brittle; handle it carefully.

d. Carefully slide upper overlay panel into slot of middle bar on front panel.

e. Carefully install upper edge bar and secure to front panel by using four Phillips-head screws and lockwashers.

f. Plug P2 into frequency switchboard jack A2J4.

g. Attach front panel to unit by using four hexhead screws and attaching hardware.

h. Install unit top cover.

5-9.5.2.5. Speaker Installation.

a. Mount speaker to front panel, using four Phillips-head screws and attaching hardware (screwheads on front of front panel).

b. Mount panel support (middle bar on front panel) to front panel by using four Phillips-head screws and lockwashers.

c. Slide speaker overlay panel and lower overlay panel into slot of middle bar on front panel.

d. Carefully install lower edge bar and secure to front panel by using four Phillips-head screws and lockwashers.

CAUTION

Upper overlay panel (plexiglas) is brittle; handle carefully.

e. Carefully slide upper overlay panel into slot of middle bar on front panel.

f. Carefully install upper edge bar and secure to front panel by using four Phillips-head screws and lockwashers.

g. Install all knobs on front panel switches and controls.

h. Plug jack J47 into speaker plug A2P2.

i. Install front panel to unit, using four hexhead screws and attaching hardware.

j. Install unit top cover.

5-10. RADIO TRANSMITTER, T-1453/TSC-60(V) (HF-8014A). The following paragraphs contain instructions for performance testing, alignment, and repair of the HF-8014A. Testing is to a level necessary to isolate faults to a circuit card or group of cards.

WARNING

To prevent possibility of electrocution or personal injury, remove all conductive items (anything made of metal) from hands and arms before reaching into or working on electrical equipment.

CAUTION

Electrostatic discharge sensitive (ESDS) devices are in this assembly. Static electricity can damage these devices. Special handling methods and materials must be used to prevent damage. Do not touch or remove any ESDS device or any assembled circuit that has an ESDS device without properly grounding your body, test equipment, and all tools. Be thoroughly familiar with the handling procedures specified in T.O. 00-25-234. Move or store assembled circuit boards only in conductive (antistatic) bags. Do not touch the printed circuits or the connector pins on the board; handle board by the edges only.

5-10.1. Test Points. Test points used in testing the HF-8014A are listed in table 5-17.

5-10.2. Performance Tests. Table 5-18 lists the test equipment required and the procedures for testing performance of the HF-8014A. Perform all steps in table 5-18 in the order listed. Continue through the numbered steps until a malfunction is discovered or the test is complete. If the unit fails to meet a performance standard, troubleshoot by the fault-isolation procedures in paragraph 5-10.3. Perform the performance tests periodically as directed by the site maintenance supervisor. Between these periodic checks, perform the performance test after any repair or alignment.

Table 5-17. HF-8014A Exciter Test Points

Test point	Location	Circuit function
TB1-1	Power supply A1	+24 V dc
TB1-3	Power supply A1	+15 V dc
TB1-5	Power supply A1	Ground
TB1-6	Power supply A1	+8 V dc
TB1-7	Power supply A1	+5 V dc
TB1-8	Power supply A1	-15 V dc
TP2	Transmit audio A3	Channel A2 transmit line
TP3	Transmit audio A3	Channel A2 transmit audio frequency
TP6	Transmit audio A3	Channel B2 transmit line
TP2	Transmit audio A4	Channel A1 transmit line
TP3	Transmit audio A4	Channel A1 transmit audio frequency
TP4	Transmit audio A4	Microphone audio frequency
TP6	Transmit audio A4	Channel B1 transmit line
TP1	Control A10	Ground
TP3	Control A10	Exciter tune
TP6	Control A10	TGC input

5-10.3. Fault Isolation. C-11070/TSC-60(V) Control-Monitor (373J-1) is used to aid in isolating faults in the HF-8014A Exciter. Status indicators on the 373J-1 indicate failures in components of the HF-8014A. The 373J-1 should always be turned on when the system is operating. The SUMS FAULTS indicators on the 373J-1 lights whenever a fault occurs in the radio. Use the 373J-1 CONTROL SELECT switch to select the component (RCVR or XMTR) in which the SUM FAULTS indicator shows a fault. The STATUS indicators on the 373J-1 (table 5-19) then light to show the probable source of the problem. If the 373J-1 cannot locate the fault, perform the procedures in table 5-20 to isolate it. The following procedures use the 373J-1 to isolate faults in the HF-8014A.

a. The 373J-1 should always be turned on when the HF-8014A is operating. When the EXCTR 1 SUM FAULTS indicator on the 373J-1 lights, set the CONTROL SELECT switch to EXCTR 1. The STATUS indicators on the 373J-1 then display status information for the HF-8054A.

b. Refer to table 5-19 for a list of the circuit card failures associated with the STATUS indicators. Locate the lighted STATUS indicators in the table and perform the action listed for that indicator.

Table 5-18. HF-8014A Exciter Performance Test

Test equipment required:

Transmission Test Set, HP-3551A
RF Voltmeter, Boonton 92C,
with 50-ohm adapter probe 91-8B

Frequency Counter, HP-5335A

NOTE

Equivalent test equipment may be substitued for test equipment listed.

Preliminary instructions:

a. On power distribution panel, ensure that MAIN POWER circuit breaker is set to on and EXCTR/PRESEL circuit breaker is pressed in (on).

b. Press exciter PWR switch off.

c. Remove four screws holding exciter in raack and slide exciter forward. Remove top cover from exciter.

d. Disconnect cables from XMT OUT jack J22 on exciter. Disconnect cable W236 from LOCAL PA jack J6 on radio patch panel.

e. Set exciter controls as follows:

METER switch to XMT OUT

PA PWR switch to OFF

KEY switch to NORM

PEAK CLIP switch to OFF

PILOT CARR switch to OFF

MODE switch to CW

CONT switch to LCL

All CHANNEL ENABLE switches to OFF

FREQUENCY KHZ thumbwheels to 02000.0.

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1			Press exciter PWR switch on and set FREQUENCY KHZ thumbwheels to 04000.0.	

Table 5-18. HF-8014A Exciter Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
2	Connect rf voltmeter with 50-ohm probe to XMT OUT jack J22 on exciter rear panel.			
3			Set exciter KEY switch to LOCK. Connect a jumper between TP3 and TP1 on control card A10	Rf voltmeter indicates +20.5 to +22.5 dB mW
4	Set exciter KEY switch to NORM. Disconnect jumper between TP3 and TP1 on control card A10		Set exciter FREQUENCY KHZ thumbwheels to 16000.0 kHz	
5	Repeat step 3.			Same as step 3.
6	Repeat steps 4 and 5 for 29000.0 kHz			Same as step 5.
7			Set exciter KEY switch to NORM. Disconnect jumper between TP3 and TP1 on control card A10.	
8	Connect transmission test set send terminal A1 TX EQPT jack J7 on audio jackfield. Set transmission test set for 1000-Hz output at -25 dB mW. Note rf voltmeter indication for reference in following step.		On exciter, set controls as follows: MODE switch to ISB CHANNEL ENABLE A1 to LINE FREQUENCY KHZ to 16000.0 KEY to LOCK.	
9	Increase transmission test set output to -19 dB mW.			Rf voltmeter indication increases 6 ±0.5 dB from reference.
10			Set exciter KEY switch to NORM.	
11	Connect transmission test set send terminaal to B1 TX EQPT jack J4 on audio		On exciter, set controls as follows:	

Table 5-18. HF-8014A Exciter Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
11 (cont)	jackfield. Set transmission test for 1000-Hz output at -25 dB mW. Note rf voltmeter indication for reference in following step.		CHANNEL ENABLE A1 to OFF CHANNEL ENABLE B1 to LINE KEY to LOCK.	
12	Increase transmission test set output to -19 dB mW.			Rf voltmeter indication increases 6 ±0.5 dB mW from reference.
13			Set exciter KEY switch to NORM.	
14	Connect transmission test set send terminal to A2 TX EQPT jack on audio jackfield. Set transmission test set for 1000-Hz output at -25 dB mW. Note rf voltmeter indication for reference in following step.		On exciter, set controls as follows: CHANNEL ENABLE B1 to OFF CHANNEL ENABLE A2 to LINE KEY to LOCK.	
15	Increase transmission test set output to -19 dB mW.			Rf voltmeter indication increases 6 ±0.5 dB.
16			Set exciter KEY switch to NORM.	
17	Connect transmission test set send terminal to B2 TX EQPT jack J1 on audio jackfield. Set transmission test set for 1000-Hz output at -25 dB mW. Note rf voltmeter indication for reference in following step.		On exciter, set controls as follows: CHANNEL ENABLE A2 to OFF CHANNEL ENABLE B2 to LINE KEY to LOCK.	
18	Increase transmission test set output to -19 dB mW.			Rf voltmeter indication increases 6 ±0.5 dB.
19			Set exciter KEY switch to NORM.	

Table 5-18. HF-8014A Exciter Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
20	Connect transmission test set send terminal to A1 TX EQPT jack J7 on audio jackfield. Set transmission test set for 1000-Hz output at 0 dB mW.		On exciter, set controls as follows: CHANNEL ENABLE A1 to LINE; all other channel enables to OFF FREQUENCY KHZ to 08000.0.	
21			Set exciter KEY switch to LOCK. Note rf voltmeter reading for reference in following steps.	
22	Decrease transmission test set frequency until rf voltmeter reading falls 3 dB below reference.			Transmission test set shows frequency of 250 Hz or less.
23	Increase transmission test set frequency (from 1 kHz) until rf voltmeter reading decreases 3 dB below reading obtained in step 28.			Transmission test set shows frequency of 3100 Hz or more.
24	Disconnect transmission test set and rf voltmeter from exciter.		Set exciter MODE switch to CW.	
25	Connect frequency counter through a 50-ohm adapter to XMT OUT jack J22 on rear of exciter.		Set exciter KEY switch to LOCK	
			Set exciter FREQUENCY KHZ thumbwheels to 03333.3.	Frequency counter indicates 3.3333 MHz.
26	Repeat step 26 at the following frequency settings:			Frequency counter indication:
	04444.4			4.4444 MHz
	07777.7			7.7777 MHz
	08888.8			8.8888 MHz
	29999.9			29.9999 MHz

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Table 5-18. HF-8014A Exciter Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
27	Disconnect frequency counter from exciter.			
28			Restore equipment to normal operating configuration.	

Table 5-19. Exciter Fault Indications on 373J-1

STATUS indicator	Action
SYNTH	Check to see which of following indicators are lit: 100Hz, 1 FLT, 10kHz FLT or 100kHz FLT.
100HZ FLT	Replace synthesizer end decade card A19
1KHZ FLT	Replace synthesizer 1-kHz decade card A20.
10KHZ FLT	Replace synthesizer 10-kHz decade card A21
100KHZ FLT	Replace synthesizer 100-kHz decade card A22.
FREQ FLT	Replace synthesizer reference card A16.
SUBCR FLT	Replace synthesizer subcarrier generator A15.
PS FLT	Replace power supply A1
EXTR IF	Replace channel A1 if. card A8

Table 5-20. HF-8014A Exciter Fault Isolation Tests

Test equipment required:

Digital Voltmeter, Fluke 8520A	Transmission Test Set, HP-3551A
RF Voltmeter, Boonton 92C (with 50-ohm probe)	Frequency Counter, HP-5335A

NOTE

Equivalent test equipment may be substitued for test equipment listed.

Preliminary instructions:

a. On power distribution panel, ensure that MAIN POWER circuit breaker is set to on and EXCTR/PRESEL circuit breaker is pressed in (on).

b. Press exciter PWR switch off.

c. Disconnect cables from XMT OUT jack J22 on rear of exciter. Disconnect cable W236 from LOCAL PA jack J6 on radio patch panel.

d. Remove top and bottom covers from exciter.

WARNING

High voltage exists on the exposed terminals on the bottom of exciter with primary power applied. Death on contact may result if personnel fail to observe safety precautions during testing of the unit.

e. Set exciter controls as follows:

METER switch to XMT OUT

PA PWR switch to OFF

KEY switch to EXT

PEAK CLIP switch to OFF

PILOT CARR switch to OFF

MODE switch to ISB

CONT switch to LCL

All CHANNEL ENABLE switches to OFF

FREQUENCY KHZ thumbwheels to 07000.0.

f. Press exciter PWR switch to ON. Set FREQUENCY KHZ thumbwheels to 08000.0.

Table 5-20. HF-8014A Exciter Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
1	With dvm, measure voltage between following points and A1TB1-5 (ground) on bottom of exciter:		Check power supply A1
	A1TB1-7	5 ±0.2 V dc	
	A1TB1-6	8 ±0.4 V dc	
	A1TB1-1	24 ±1.0 V dc	
	A1TB1-3	15 ±0.6 V dc	
	A1TB1-8	-15 ±0.6 V dc	
		Gain check	
2	Connect rf voltmeter with 50-ohm probe to XMT OUT jack J22 on exciter rear panel.		
3	Set exciter KEY switch to LOCK. Connect a jumper between TP1 and TP3 on control card A10.		
4	Set exciter FREQUENCY KHZ thumbwheels to 04000.0.	Rf voltmeter indicates +20.5 to +22.5 dB mW. Note rf voltmeter indication for reference in following steps.	Replace channel A1 if. card A8
5	Repeat step 4 for the following frequencies: 16000.0 kHz 29900.0 kHz		
6	Disconnect jumper between TP1 and TP3 on control card A10. Set exciter FREQUENCY KHZ switches to 08000.0.		
7	Connect transmission test set send terminal to A1 TX EQPT jack J7 on audio jackfield.		
8	Set exciter controls as follows: METER switch to CH A1 AF MODE switch to ISB CHANNEL ENABLE A1 to LINE.		

Table 5-20. HF-8014A Exciter Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Gain check-Continued		
9	Set transmission test set for 1000-Hz output at -25 dB mW. Set exciter KEY switch to LOCK. Note rf voltmeter reading for reference.		
10	Increase transmission test set output to -19 dB mW.	Rf voltmeter reading increases 6 ±0.5 dB from reference.	Replace transmit audio card A4 or channel A1 if. card A8.
11	Set exciter KEY switch to NORM.		
12	a. On exciter, set CHANNEL ENABLE A1 to OFF and B1 to LINE.		
	b. Connect transmission test set send terminal to B1 TX EQPT jack J4 on audio jackfield.		
	c. Set test set for 1000-Hz output at -25 dB mW.		
13	Set exciter KEY switch to LOCK. Note rf voltmeter reading for reference.		
14	Increase transmission test set output to -19 dB mW.	Rf voltmeter reading increases 6 ±0.5 dB from reference.	Replace transmit audio card A4 or channel B1 if. card A7.
15	Set exciter KEY switch to NORM.		
16	a. On exciter, set CHANNEL ENABLE B1 to OFF and A2 to LINE.		
	b. Connect transmision test set send terminal to A2 TX EQPT jack J10 on audio jackfield.		
	c. Set test set for 1000-Hz output at -25 dB mW.		
17	Set exciter KEY switch to LOCK. Note rf voltmeter reading for reference.		
18	Increase transmission test set output to -19 dB mW.	Rf voltmeter reading increases 6 ±0.5 dB from reference.	Replace transmit audio card A3 or channel A2 if. card A6.
19	Set exciter KEY switch to NORM.		
20	a. On exciter, set CHANNEL ENABLE A2 to OFF and B2 to LINE.		

Table 5-20. HF-8014A Exciter Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Gain check-Continued		
	b. Connect transmision test set send terminal to B2 TX EQPT jack J1 on audio jackfield.		
	c. Set test set for 1000-Hz output at -25 dB mW.		
21	Set exciter KEY switch to LOCK. Note rf voltmeter reading for reference.		
22	Increase transmission test set output to -19 dB mW.	Rf voltmeter reading increases 6 ±0.5 dB from reference.	Replace transmit audio card A3 or channel B2 if. card A5.
23	Set exciter KEY switch to NORM.		
24	Connect transmission test send terminal to A1 TX EQPT jack J7 on audio jackfield. Set transmission test set for 1000-Hz output at 0 dB mW. On exciter, set CHANNEL ENABLE A1 to LINE and all other channel enables to OFF.		
25	Set KEY switch to LOCK and note dB mW reading on rf voltmeter for reference in following steps.		
26	Decrease transmission test set frequency until rf voltmeter reading falls 3 dB below reading obtained in step 25. Note transmission test set frequency (after rf voltmeter reading decreases 3 dB) for reference in following step.	Transmission test set frequency is 250 Hz or less when rf voltmeter reading decreases 3 dB.	Replace transmit audio card A4
27	Set transmission test set frequency to 1000 Hz at 0 dB mW.		
28	Increase transmission test set frequency until rf voltmeter reading is 3 dB less than that of step 25. After rf voltmeter reading decreases 3 dB, note transmission test set frequency for reference in following step.	Transmission test set frequency is 3100 Hz or more after rf voltmeter reading decreases 3 dB.	Replace transmit audio card A4
29	Sweep transmission test set frequency between two frequencies obtained in steps 26 and 28.	Ripple on rf voltmeter is not more than 2 dB.	Replace transmit audio card A4.

Table 5-20. HF-8014A Exciter Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Gain check-Continued		
30	Repeat steps 23 through 29 for channels B1, A2, B2.	Same as in steps 23 through 29.	Replace transmit audio card A4 for channel B1 or A3 for channels A2 and B2.
31	Disconnect transmission test set. Set exciter controls as follows: METER switch to XMT OUT MODE switch to CW All CHANNEL ENABLE switches to OFF FREQUENCY KHZ thumbwheels to 04444.4.		
32	Connect frequency counter through a 50-ohm adapter to XMT OUT jack J22 on rear of exciter.		
33	Set exciter KEY switch to LOCK.	Frequency counter reads 4.444 MHz.	Check synthesizer and frequency switchboard A2A3.
34	Set exciter FREQUENCY KHZ thumbwheels to 08888.8.	Frequency counter reads 8.888 MHz.	Same as step 33.
35	Repeat step 34 at the following frequencies (kHz):	Frequency counter reads:	Same as step 33.
	11111.1	11.1111 MHz	
	22222.2	22.2222 MHz	
	29999.9	29.9999 MHz	
	Remote control check		
36	Set exciter controls as follows: METER switch to XMT OUT PA PWR switch to OFF KEY switch to EXT PEAK CLIP switch to OFF PILOT CARR switch to OFF		

Table 5-20. HF-8014A Exciter Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Remote control check-Continued		
36 (Cont)	MODE switch to CW All CHANNEL ENABLE switches to OFF CONT switch to LCL PWR switch to OFF.		
37	Ensure that P1 of cable W183 is connected to J1 on rear of 373-1 remote control unit.		
38	Set remote control unit controls as follows: ON/OFF switch to ON CONTROL SELECT switch to correct position (XMTR 1 or XMTR 2) for exciter being tested.		
39	Press exciter PWR switch on. Change one digit of exciter FREQUENCY switches to clear exciter fault.	EXCITER FAULT indicator on exciter is off.	Check control card A10 and LED status display A2A5.
40	On remote control unit, press following switches while observing exciter status and mode displays. MODE switch CHANNEL CONTROL-ENABLE switches PILOT CARR switch PEAK CLIP switch KEY switch	Pressing remote control unit switches has no effect on exciter status and mode displays.	Check parallel input card A11, parallel output card A12, and serial interface card A13.
41	On exciter, set CONT switch to REM.		
42	Press MODE-ISB and CHANNEL CONTROL ENABLE-A1 switches on remote control unit.	ISB and ISB MODE-A1 indicators on exciter light.	Check parallel input card A11, parallel output card A12, and serial interface card A13.
43	Set remote control unit FREQUENCY SELECT switches to 04000.0.		

Table 5-20. HF-8014A Exciter Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Remote control check-Continued		
44	Press remote control unit TUNE INIT switch.	Exciter frequency display shows 04000.0.	Same as step 42.
45	Set exciter MODE switch to CW, KEY switch to LOCK, and PILOT CARR switch ON.	Changing of exciter controls has no effect on exciter displays.	Same as step 42.
46	Set exciter KEY switch to NORM and PILOT CARR switch to OFF.		
47	Set exciter CONT switch to LCL.		
48	Set exciter FREQUENCY KHZ thumbwheels to 08000.0.	Exciter display shows setting of exciter switches.	Check control card A10 or LED status display A2A5
49	Set exciter CONT switch to REM.		
50	Press PEAK CLIPPER and PILOT CARRIER switches on remote control unit.	PEAK CLIP and PILOT CARR indicators on exciter light.	Same as step 42
51	Press exciter PWR switch off and set CONT switch to LCL.		
52	Set ON/OFF switch on remote control unit to OFF.		
53	Reconnect cables to rear connectors on exciter. Restore equipment to normal operating configuration.		

5-10.4. Alignment and Adjustment Procedures. The following paragraphs contain instructions for testing, aligning, and repairing the HF-8014A.

5-10.4.1. Exciter Gain Adjustment.

a. Press exciter PWR switch to off.

b. Remove rf translator card A9 from exciter and remove shield from card.

c. Extend rf translator A9, using card extender and rf cables.

d. Press exciter PWR switch on.

e. Connect rf signal generator to J2 rf on translator A9 (figure 5-5).

f. Set exciter FREQUENCY KHZ switches to 15000.0 kHz.

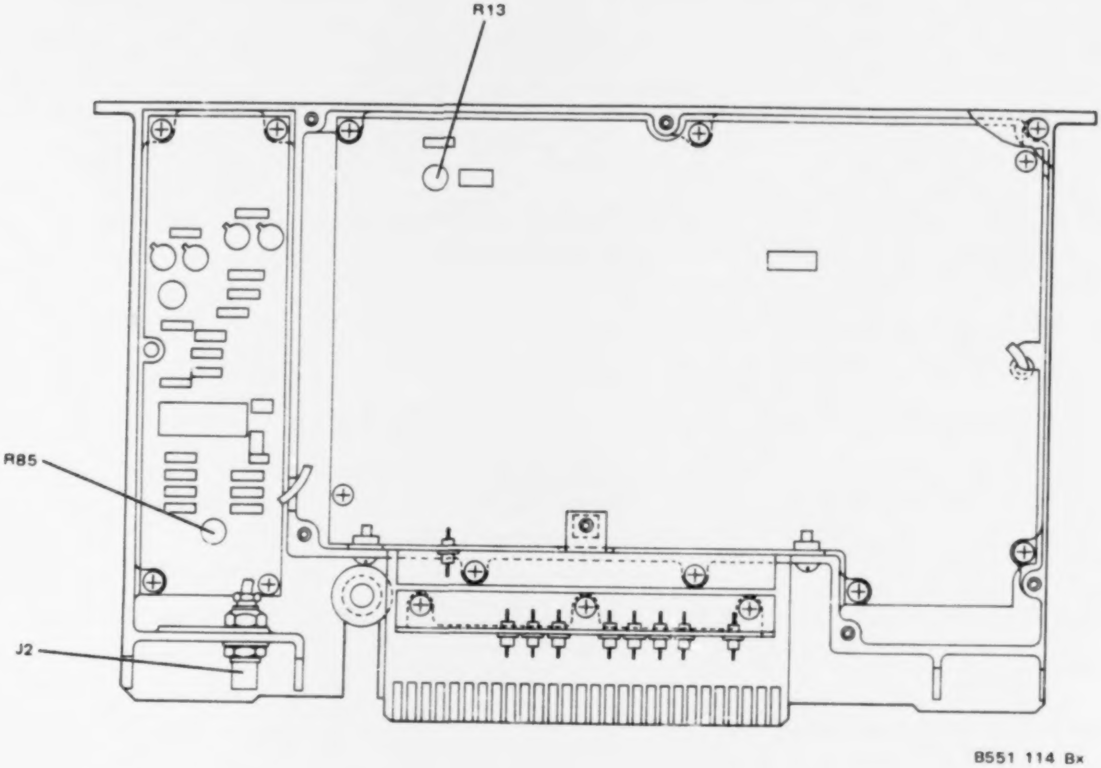


Figure 5-5. HF-8014A RF Translator A9, Location of Adjustment

g. Connect rf voltmeter with 50-ohm adapter to XMT OUT jack J22 on rear of exciter.

h. Set signal generator for 9.4500-MHz output at 35 mV rms. Set exciter KEY switch to LOCK.

i. Adjust R13 of rf translator A9 (figure 5-5) for a + 19-dB mW reading on rf voltmeter.

j. Set exciter KEY switch to NORM.

k. Press exciter PWR switch off.

l. Remove card from extender and reinstall shield on rf translator card.

m. Remove card extender and reinstall translator card in exciter.

5-10.4.2. Microphone Compression Threshold Adjustment.

a. Press exciter PWR switch off.

b. Extend transmit audio card A4, using card extender.

c. Press exciter PWR switch on.

d. Ensure that compression circuit is enabled by checking for a shorting bar across pins 1 and 2 (E2) on transmit audio card A4 (figure 5-6).

e. Set exciter MODE switch to AM.

f. Connect transmission test set send terminal through a microphone impedance-matching pad (figure 5-7) to MIC jack on exciter front panel.

g. Set the transmission test set for 1000-Hz output at -23 dB mW.

h. Set the exciter CHANNEL ENABLE A1 switch to MIC.

i. Connect dvm to TP4 (yellow) and TP1 (brown) on transmit audio card A4.

j. Set exciter KEY switch to LOCK.

k. Adjust R1 on transmit audio card A4 for 15 ±0.5-mV ac reading on dvm.

l. Set transmission test set for 1000-Hz output at -3.3 dB mW.

m. Connect dvm to TP3 (orange) and TP1 (brown) on transmit audio card A4.

n. Adjust R28 on transmit audio card A4 for 30±0.5-mV ac reading on dvm.

o. Readjust A4R1 until output level at TP3 just starts to decrease.

p. Set exciter KEY switch to NORM.

q. Press exciter PWR switch off.

r. Remove card extender and reinstall transmit audio card in exciter.

5-10.4.3. Channel A1 Transmit Line Adjustment. Variable resistor A4R53 controls the channel A1 transmit line audio input. Adjust channel A1 transmit line as follows:

a. On exciter, set controls as follows:

CONT to LCL

KEY to NORM

MODE to ISB

PA PWR to OFF

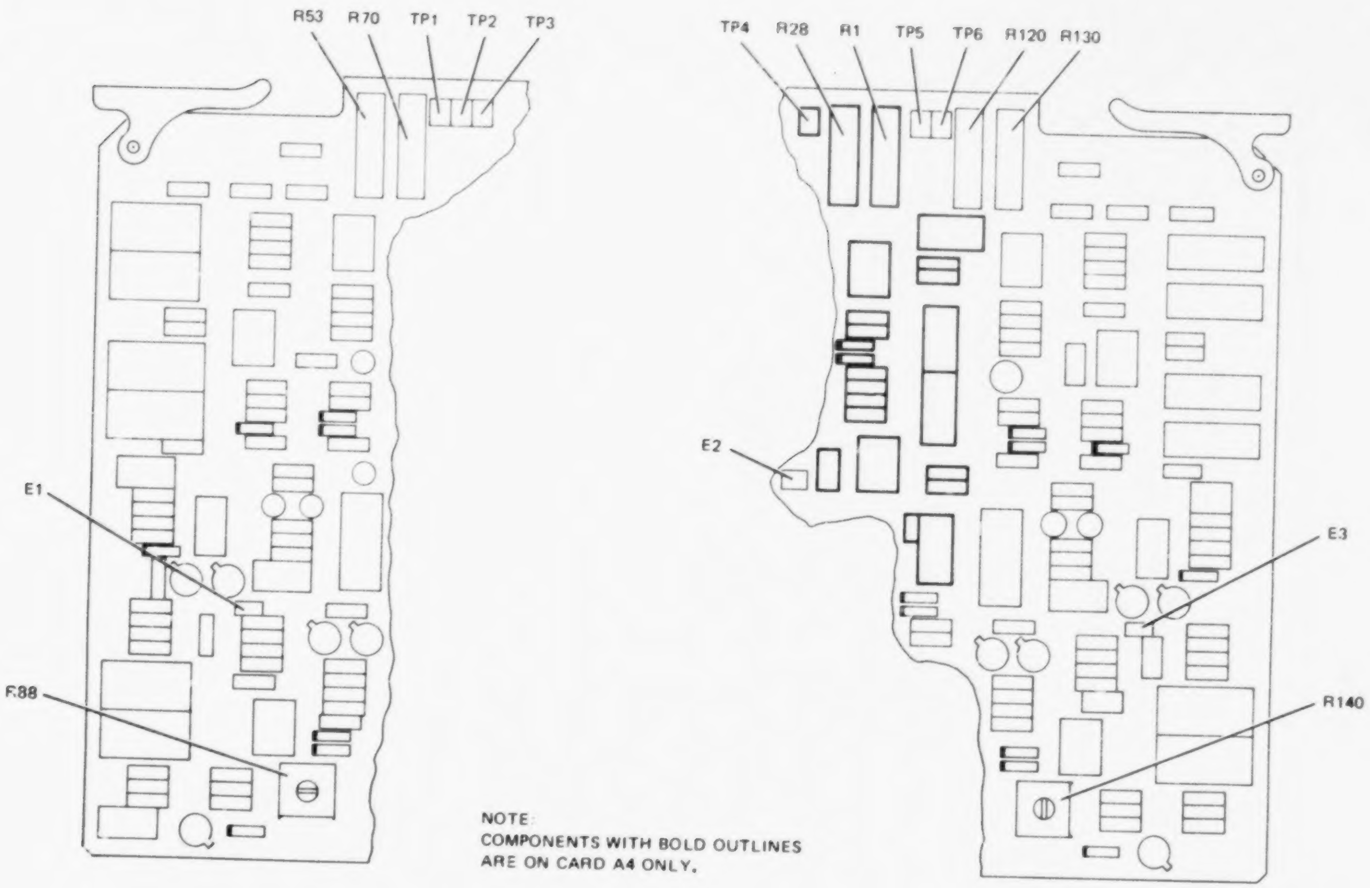
PILOT CARR to OFF

A1 LINE-CHANNEL switch to LINE. All other enable switches to OFF

PWR to on

FREQUENCY KHZ to 14000.0.

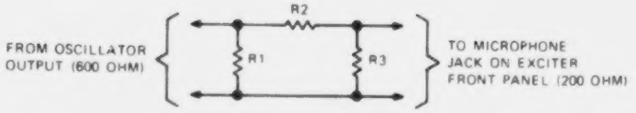
METER to A1 AF


R53
R70
TP1
TP2
TP3
TP4
R28
R1
TP5
TP6
R120
R130
E1
E2
E3
R88
R140

NOTE:
COMPONENTS WITH BOLD OUTLINES
ARE ON CARD A4 ONLY.

8551 067 Bx

Figure 5-6. HF-8014A Transmit Audio Cards A3 and A4, Location of Test Points


R2
FROM OSCILLATOR OUTPUT (600 OHM)
R1
R3
TO MICROPHONE JACK ON EXCITER FRONT PANEL (200 OHM)

IMPEDANCE MATCHING PAD LIST OF PARTS		
PART	PART NUMBER	COMPONENT VALUE
R1	705-3603-000	604 OHM, 1/4 W, 1%
R2	705-6644-000	10.0 k OHM, 1/4 W, 1%
R3	705-6765-000	200 OHM, 1/4 W, 1%

8551 068 8x

Figure 5-7. Microphone Impedance-Matching Pad, Parts List and Schematic Diagram

b. On HF-8023 pa, set REMOTE/LOCAL switch to REMOTE and meter select switch to FWD PWR.

c. Connect transmission test set send terminal to A1 TX EQPT jack J7 on audio jackfield.

d. Set transmission test set for 1000-Hz output at 0 dB mW.

e. On exciter, set PA PWR switch to HIGH PWR and KEY switch to LOCK.

f. Adjust A4R53 (CHAN A1 XMT LINE ADJ., figure 5-8) for a maximum forward power indication on pa.

g. Turn A4R53 cw until pa output power just starts to decrease.

h. Slowly decrease transsmision test set output level and note that pa output level also decreases. If pa output does not decrease, repeat step g.; then repeat this step.

5-10.4.4. Channel B1 Transmit Line Adjustment. Variable resistor A4R130 controls channel B1 transmit line audio input. Adjust channel B1 transmit line as follows:

a. On exciter, set controls as follows:

CONT to LCL

KEY to NORM

MODE to ISB

PA PWR to OFF

PILOT CARR to OFF

B1 LINE-CHANNEL switch to LINE. All other enable switches to OFF

PWR to on

FREQUENCY KHZ to 14000.0

METER to B1 AF

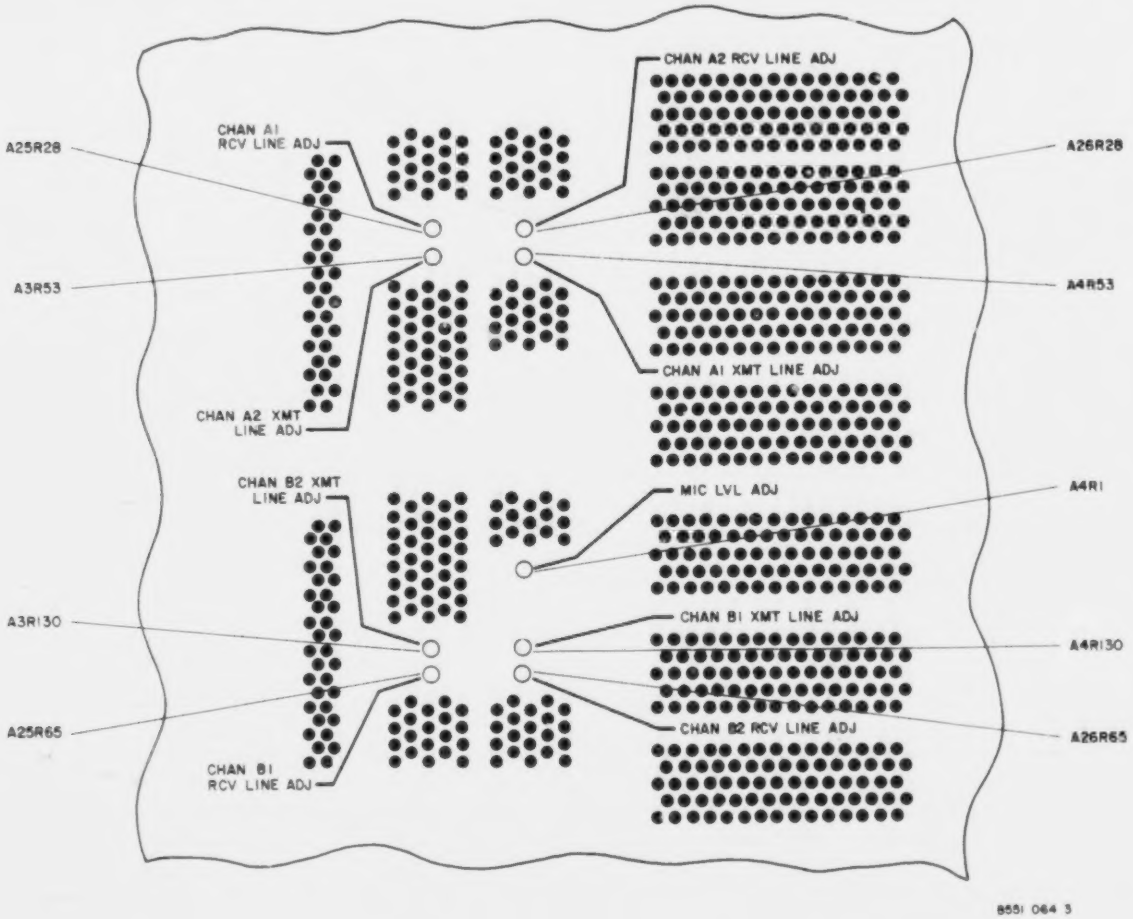

CHAN A2 RCV LINE ADJ
CHAN A1 RCV LINE ADJ
A25R28
A26R28
A3R53
A4R53
CHAN A1 XMT LINE ADJ
CHAN A2 XMT LINE ADJ
CHAN B2 XMT LINE ADJ
MIC LVL ADJ
A4R1
A3R130
CHAN B1 XMT LINE ADJ
A4R130
A25R65
CHAN B2 RCV LINE ADJ
A26R65
CHAN B1 RCV LINE ADJ
8551 064 3

Figure 5-8. HF-8014A Top Cover Adjustments

b. On HF-8023 pa, set REMOTE/LOCAL switch to REMOTE and meter select switch to FWD PWR.

c. Connect transmission test set send terminal to B1 TX EQPT jack J4 on audio jackfield.

d. Set transmission test set for 1000-Hz output at 0 dB mW.

e. On exciter, set PA PWR switch to HIGH PWR and KEY switch to LOCK.

f. Adjust A4R130 (CHAN B1 XMT LINE ADJ, figure 5-8) for a maximum forward power indication on pa.

g. Turn A4R130 cw until pa output power just starts to decrease.

h. Slowly decrease transmission test set output level and note that pa output level also decreases. If pa output does not decrease, repeat step g.; then repeat this step.

5-10.4.5. Channel A2 Transmit Line Adjustment. Variable resistor A3R130 controls channel A2 transmit line audio input. Adjust channel A2 transmit line as follows:

a. On exciter, set controls as follows:

CONT to LCL

KEY to NORM

MODE to ISB

PA PWR to OFF

PILOT CARR to OFF

A2 LINE-CHANNEL switch to LINE; all other enable switches to OFF

PWR to on

FREQUENCY KHZ to 14000.0

METER to A2 AF.

b. On HF-8023 pa, set REMOTE/CONTROL switch to REMOTE and meter select switch to FWD PWR.

c. Connect transmission test set send terminal to B1 TX EQPT jack J4 on audio jackfield.

d. Set transmission test set for 1000-Hz output at 0 dB mW.

e. On exciter, set PA PWR switch to HIGH PWR and KEY switch to LOCK.

f. Adjust A3R130 (CHAN A2 XMT LINE ADJ, figure 5-8) for a maximum forward power indication on pa.

g. Turn A3R130 cw until pa output power just starts to decrease.

h. Slowly decrease transmission test set output level and note that pa output level also decreases. If pa output does not decrease, repeat step g.; then repeat this step.

5-10.4.6. Channel B2 Transmit Line Adjustment. Variable resistor A3R130 controls the channel B2 transmit line audio input. Adjust channel B2 transmit line as follows:

a. On exciter, set controls as follows:

CONT to LCL

KEY to NORM

MODE to ISB

PA PWR to OFF

PILOT CARR to OFF

B2 LINE-CHANNEL switch to LINE; all other enable switches to OFF

PWR to on

FREQUENCY KHZ to 14000.0

METER to B2 AF.

b. On HF-8023 pa, set REMOTE/LOCAL switch to REMOTE and meter select switch to FWD PWR.

c. Connect transmission test set send terminal to B2 TX EQPT jack J1 on audio jackfield.

d. Set transmission test set for 1000-Hz output at 0 dB mW.

e. On exciter, set PA PWR switch to HIGH PWR and KEY switch to LOCK.

f. Adjust A3R130 (CHAN B2 XMT LINE ADJ, figure 5-8) for a maximum forward power indication on pa.

g. Adjust A3R130 clockwise until pa output power just starts to decrease.

h. Slowly decrease transmission test set output level and note that pa output level also decreases. If pa output does not decrease, repeat step g.; then repeat this step.

5-10.4.7. Microphone Level Adjustment. Microphone level is set so that when someone speaks into the microphone in a normal voice the front-panel meter shows between -5 and 0 dB mW. Variable resistor A4R1 (MIC LVL ADJ, figure 5-8) adjusts the microphone input audio level and permits large variation in speaking levels and microphone-to-mouth distance while still delivering full rf output. The microphone compression range is 30 dB. Adjust microphone level as follows:

a. Set METER switch to CH A1 AF, CHANNEL ENABLE A1 switch to MIC, and MODE switch to any position except CW.

b. Plug microphone into MIC jack on front panel of exciter.

c. Press push-to-talk key and speak into microphone in a normal voice. While speaking into microphone and pressing ptt key, adjust A4R1 (MIC LVL ADJ, figure 5-8) so that exciter meter reads between -5 and 0 dB mW.

d. Release ptt key.

5-10.4.8. Tune Power Adjustment. Adjust tune power level as follows:

a. Press exciter PWR switch off.

b. Extend channel A1 if. card A8, using card extender and rf cables.

c. Press exciter PWR switch on.

d. Connect rf voltmeter with 50-ohm probe through a 6-dB pad to XMT OUT jack J22 on rear of exciter.

e. Connect a jumper between TP3 (orange) and ground (TP1, brown) on control card A10 to enable tune power.

f. Set FREQUENCY KHZ thumbwheels to 10000.0.

g. Set KEY switch to LOCK.

h. Rf voltmeter reading should be not less than + 14 dB mW for any frequency, 2.0 to 29.9999 MHz. If rf output is + 14 dB mW or more, note rf output level for reference and proceed to step j. If rf output is less than 14 dB mW, proceed to step i.

i. Adjust A8R152 (figure 5-9) until rf voltmeter shows not less than + 14 dB mW. Repeat step h.

j. Set KEY switch to NORM.

k. Disconnect jumper from A10TP3.

5-10.4.9. AM Power Adjustment. Adjust AM power level as follows:

a. Perform tune power adjustment procedures in paragraph 5-10.4.8.

b. Set MODE switch to AM.

c. Connect rf voltmeter with 50-ohm probe through a 6-dB pad to XMT OUT jack J22 on rear of exciter.

d. Set KEY switch to LOCK.

e. Observe rf voltmeter reading. Rf voltmeter reading should be 2 to 4 dB less than the reading noted in step h. of paragraph 5-10.4.8. If rf output is not within limits, adjust R143 on channel A1 if. card A8 (figure 5-9) for an rf output 3 dB below the reading in step h. of paragraph 5-10.4.8.

f. Set KEY switch to NORM. Leave rf voltmeter connected for next adjustment.

5-10.4.10. CW Power Adjustment. Adjust CW power level as follows:

a. Perform tune power adjustment procedures in paragraph 5-10.4.8.

b. Set MODE switch to ISB, PILOT CARR switch to ON, and CHANNEL ENABLE A1 to LINE.

c. Set KEY switch to LOCK.

d. Observe rf voltmeter reading; it should be 16 to 18 dB less than the reading noted in step h. of paragraph 5-10.4.8. If rf output is not within limits, perform step e. If output is within limits, proceed to step f.

NOTE

A level of -17 dB from tune power level of step h. of paragraph 5-10.4.8 corresponds to -20 dB from pep when the exciter is TGC/ALC controlled by the pa. The pilot carrier may be adjusted to any level over the range of -13 to -23 dB from pep.

e. Adjust R148 on channel A1 if. card A8 (figure 5-10) for an rf output 17 dB below the reading noted in step h. of paragraph 5-10.4.8.

f. Set KEY switch to NORM.

5-10.4.11. CW Hang Time Adjustment.

NOTE

CW hang time is the time that exciter/pa circuits remain keyed after the release of the input key when in CW mode. The CW hang time determines the receive break-in characteristics. The variable resistor for this adjustment can be reached by removing the top cover.

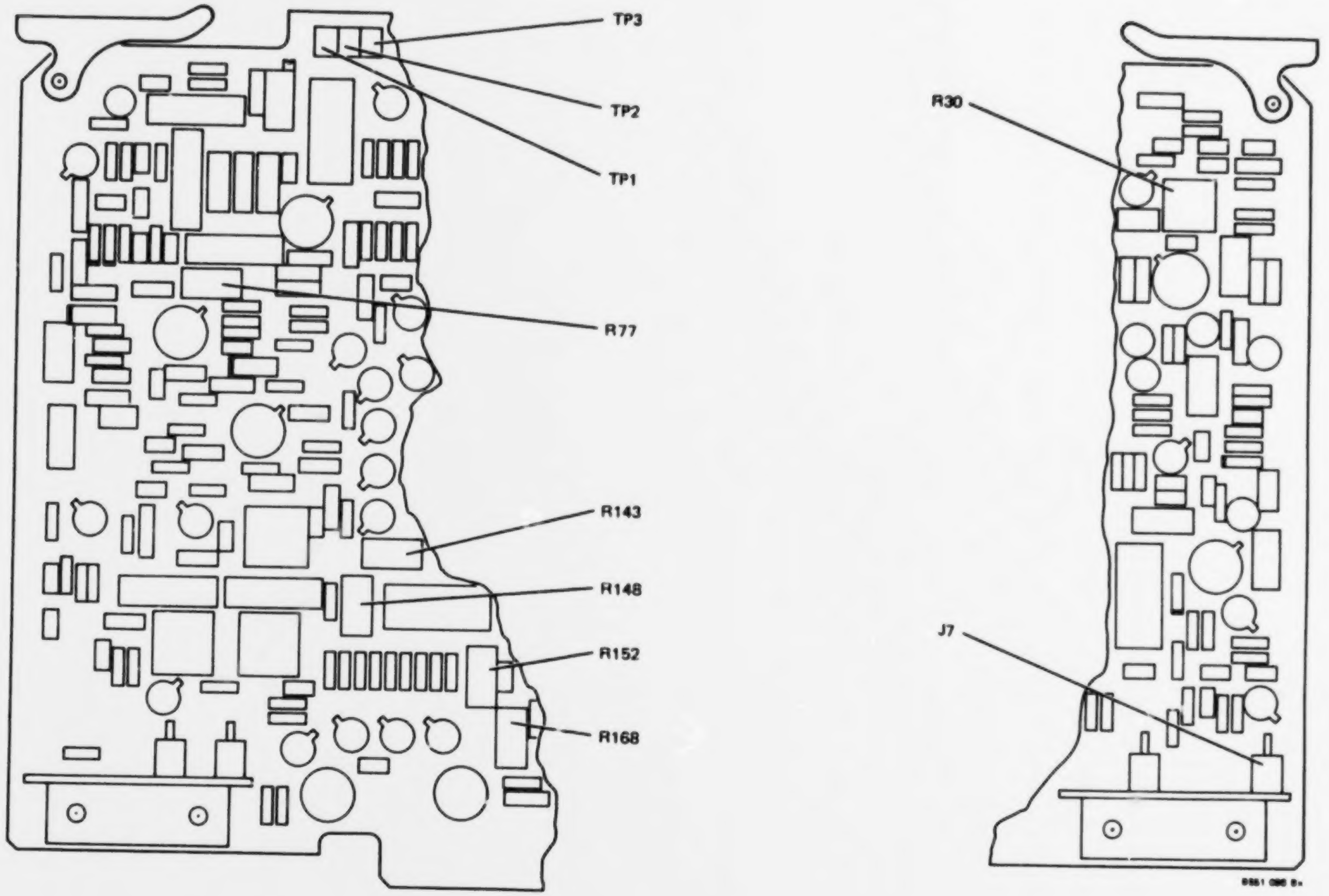

TP3
TP2
TP1
R77
R143
R148
R152
R168
R30
J7

Figure 5-9. HF-8014A Channel A1 IF Card, Adjustment Location

The CW hang time is normally set for 250 ms (0.25 second) nominal. The operator can make the CW hang time longer or shorter by the following procedures. Do not shorten the CW hang time so much that the T/R relay in the pa operates excessively during normal CW keying.

a. Set MODE to CW.

b. Operate the CW key. Adjust A10R46 to obtain the desired hang time.

5-10.4.12. Frequency Adjustment. The trim capacitor (A16C1) for this adjustment can be reached through a hole in the top of the shield on synthesizer reference A16 (figure 5-10).

NOTE

The accuracy of the frequency counter used for this adjustment must be ± 1 Hz at 10 MHz.

a. Connect frequency counter through a 6-dB pad to XMT OUT jack J22 on rear of exciter.

b. Set exciter MODE switch to CW and FREQUENCY KHZ thumbwheels to 10000.0.

c. Set exciter switch to LOCK.

d. Frequency counter should read 10.0000 MHz ±5 Hz. If frequency is not within limits, adjust A16C1 for 10.0000-MHz reading of frequency counter.

e. Set exciter KEY switch to NORM.

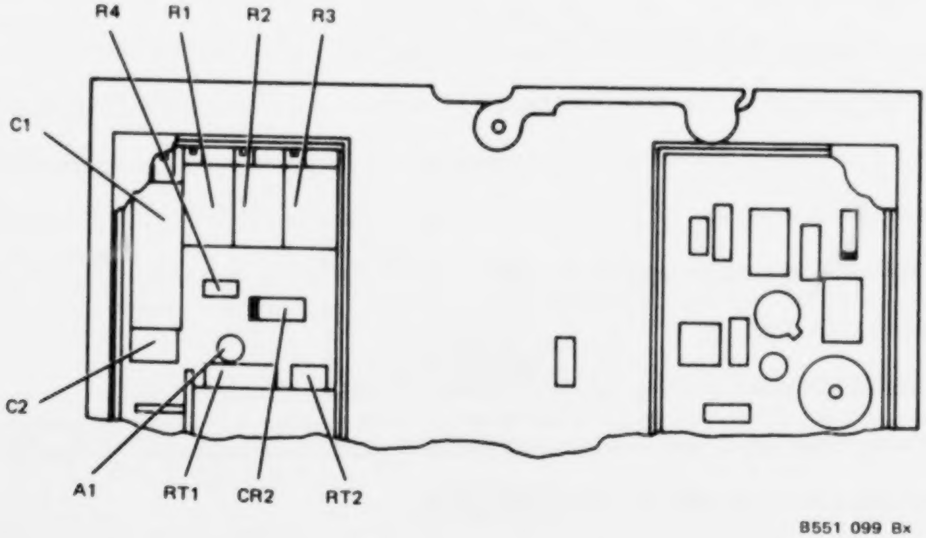


Figure 5-10. HF-8014A Synthesizer Reference A16, Location of Adjustment

5-10.4.13. Transmit Audio Meter Adjustment for Channels A1 and B1.

a. Perform line audio adjustments for channel A1 (paragraph 5-10.4.3) and channel B1 (paragraph 5-10.4.4).

b. Press exciter PWR switch off.

c. Extend transmit audio card A4, using card extender.

d. Press exciter PWR switch on.

e. Set exciter METER switch to CH A1 AF and CHANNEL ENABLE-A1 switch to LINE.

f. Connect transmission test set send terminal to A1 TX EQPT jack J7 on audio jackfield.

g. Set transmission test set for 1000-Hz output at 0 dB mW.

h. Adjust A4R88 (figure 5-6) for 0-dB mW reading on exciter front panel meter, using the +3-dB mW full-scale markings.

i. Set exciter METER switch to CH B1 AF and CHANNEL ENABLE-B1 switch to LINE.

j. Connect transmission test set send terminal to B1 TX EQPT jack J4 on audio jackfield.

k. Set transmission test set for 1000-Hz output at 0 dB mW.

l. Adjust A4R140 (figure 5-6) for 0-dB mW reading on exciter front-panel meter, using the +3-dB mW full-scale markings.

m. Press exciter PWR switch off.

n. Remove card extender and reinstall transmit audio card in exciter.

5-10.4.14. Transmit Audio Meter Adjustment for Channels A2 and B2.

a. Perform line audio adjustments for channel A2 (paragraph 5-10.4.5)and channel B2 (paragraph 5-10.4.6).

b. Press exciter PWR switch off.

c. Extend transmit audio card A3, using card extender.

d. Press exciter PWR switch on.

e. Set exciter METER switch to CH A2 AF and CHANNEL ENABLE -A2 switch to LINE.

f. Connect transmission test set send terminal to A2 TX EQPT jack on audio jackfield.

g. Set transmission test set for 1000-Hz output at 0 dB mW.

h. Adjust A3R88 (figure 5-6) for 0-dB reading on exciter front-panel meter, using the +3-dB mW full scale markings.

i. Set exciter METER switch to CH B2 AF and CHANNEL ENABLE-B2 switch to LINE.

j. Connect transmission test set send terminal to B2 TX EQPT jack J1 on audio jackfield.

k. Set transmission test set for 1000-Hz output at 0 dB mW.

l. Adjust A3R140 (figure 5-6) for 0-dB reading on exciter front panel meter, using the + 3-dB mW full-scale markings.

m. Press exciter PWR switch off.

n. Remove card extender and reinstall transmit audio card in exciter.

5-10.4.15. Transmit Output Meter Adjustment.

a. Press exciter PWR switch off.

b. Remove rf translator A9 from unit.

c. Place rf translator on extender card and replace in exciter.

d. Press exciter PWR switch to on.

e. Connect rf voltmeter with 50-ohm probe to XMT OUT jack J22 on rear of exciter.

f. Set exciter CHANNEL ENABLE-A1 switch to LINE and MODE switch to ISB.

g. Connect transmission test set send terminal to A1 TX EQPT jack on audio jackfield.

h. Set transmission test set for 1000-Hz output.

i. Set exciter KEY switch to LOCK.

j. Adjust transmission test set output level until rf voltmeter reads + 23 dB mW.

k. Set exciter METER switch to XMT OUT.

l. Adjust A9A8R85 for a + 23-dB mW (full-scale) reading on the exciter front-panel meter.

m. Set exciter KEY switch to NORM.

n. Press exciter PWR switch off.

o. Remove card extender and reinstall translator card in exciter.

5-10.5. Removal and Replacement of HF-8014A Subassemblies and Chassis-Mounted Components. The following paragraphs contain instructions for removing and replacing assemblies where the procedures are not obvious.

WARNING

Lethal voltages are present in exciter with power switch turned off and primary power still connected. Do not attempt disassembly or assembly of the unit with primary power applied.

CAUTION

Electrostatic discharge sensitive (ESDS) devices are used in this assembly. Static electricity can damage these devices. Special handling methods and materials must be used to prevent damage. Do not touch or remove any ESDS device or any assembled circuit that has an ESDS device without properly grounding your body, test equipment, and all tools. Be thoroughly familiar with the handling procedures specified in T.O. 00-25-234. Move or store assembled circuit only in conductive (antistatic) bags. Do not touch the printed circuits or the connector pins on the board; handle the board by the edges only.

5-10.5.1. Disassembly. The following paragraphs contain procedures for removal of subassemblies and chassis-mounted components from the HF-8014A where the procedures are not obvious. Disconnect power plug before performing any of these procedures.

NOTE

Retain hardware removed during disassembly for use in reassembly. Refer to parts list in T.O. 31S1-2TSC60-211 as an aid in disassembly.

5-10.5.1.1. Meter Lamp Removal/Replacement.

a. Grasp spring-loaded white terminal block and pull block away from back of meter until lamps are clear. Turn block 90 degrees and gently release.

b. Remove and replace meter lamps.

c. Grasp spring-loaded white terminal block and carefully turn the block back to its original position.

5-10.5.1.2. LED Status Display A2A1 Removal.

a. Remove unit top cover.

b. Remove front panel from unit by removing four hexhead screws and attaching hardware.

c. Remove four Phillips-head screws that secure LED status display A2A1 to hex screw posts/front panel.

d. Disconnect plug P5 from LED status display jack A2J3.

e. Carefully pull LED status display A2A1 from front panel-mounted position (pull straight back).

5-10.5.1.3. Switch Mounting Board A2A2 Removal.

a. Remove unit top cover.

b. Remove front panel from unit by removing four hexhead screws and attaching hardware.

CAUTION

Upper overlay panel (plexiglas) is brittle; handle it carefully.

c. Remove upper overlay panel from front panel as follows:

(1) Remove four Phillips-head screws and lockwashers that secure back of front panel to upper edge bar.

(2) Remove four Phillips-head screws and lockwashers that secure back of front panel to panel support (middle bar on front panel).

(3) Lift upper edge bar from front panel.

(4) Carefully remove upper overlay panel.

d. Remove lower overlay panel from front panel by as follows:

(1) Remove all knobs from front panel switches and controls.

(2) Remove four Phillips-head screws and lockwashers that secure back of front panel to lower edge bar.

(3) Lift lower edge bar from front panel.

(4) Remove lower overlay panel.

e. Remove attaching hardware from all switches, controls, and connectors on front panel.

f. Disconnect plugs P3 and P4 from switch-mounting board A2A2 jacks A2J2 and A2J1, respectively.

g. Remove switch-mounting board A2A2 by removing three Phillips-head screws and attaching hardware (screwheads on front of front panel). Be careful not to damage wiring of wire-mounted controls and connectors.

5-10.5.1.4. Frequency Display A2A5 Removal.

a. Remove unit top cover.

b. Remove four Phillips-head screws and attaching hardware.

c. Disconnect plug P8 from jack A2J5 on frequency display A2A5.

d. Carefully pull frequency display A2A5 from front panel-mounted position.

5-10.5.1.5. Frequency Switchboard A2A3 Removal.

a. Remove unit top cover.

b. Remove front panel from unit by removing four hexhead screws and attaching hardware.

CAUTION

Upper overlay panel (plexiglas) is brittle; handle it carefully.

c. Remove upper overlay panel from front panel as follows:

(1) Remove four Phillips-head screws and lockwashers that secure back of front panel to upper edge bar.

(2) Remove four Phillips-head screws and lockwashers that secure back of front panel to panel support (middle bar on front panel).

(3) Lift upper edge bar from front panel.

(4) Carefully remove upper overlay panel.

d. Remove cover plate on back of front panel by removing five Phillips-head screws and attaching hardware (screwheads on front of front panel).

e. Disconnect plug P2 from frequency switchboard A2A3 jack A2J4.

f. Remove frequency switchboard A2A3 by removing four Phillips-head screws and attaching hardware (screwheads on front of front panel).

5-10.5.2. Assembly. The following paragraphs contain procedures for replacement of subassemblies and chassis-mounted components into the HF-8014A where the procedures are not obvious.

5-10.5.2.1. Frequency Switchboard A2A3 Installation.

a. Install frequency switchboard A2A3 in front panel, using four Phillips-head screws (screwheads on front of front panel).

b. Install cover plate to back of front panel, using five Phillips-head screws and attaching hardware (screwheads on front of front panel).

c. Mount panel support (middle bar on front panel) to front panel, using four Phillips-head screws and lockwashers.

CAUTION

Upper overlay panel (plexiglas) is brittle; handle it carefully.

d. Carefully install upper overlay panel into slot of middle bar on front panel.

e. Carefully install upper edge bar and secure to front panel, using four Phillips-head screws and lockwashers.

f. Plug P2 into frequency switchboard A2A3 jack A2J4.

g. Install front panel to unit, using four hexhead screws and attaching hardware.

h. Install unit top cover.

5-10.5.2.2. Frequency Display A2A5 Installation.

a. Carefully slide frequency display A2A5 in place in front panel.

b. Connect plug P8 to jack A2J5 on frequency display A2A5.

c. Secure frequency display A2A5, using four Phillips-head screws and attaching hardware.

d. Install unit top cover.

5-10.5.2.3. Switch-Mounting Board A2A2 Installation.

a. Carefully install switch-mounting board A2A2 on front panel, using three Phillips-head screws and attaching hardware (screwheads on front of front panel). Be careful not to damage wiring of wire-mounted controls and connectors.

b. Install the necessary attaching hardware on all front panel switches, controls, and connectors.

c. Mount panel support (middle bar on front panel) to front panel by using four Phillips-head screws and lockwashers.

d. Install lower overlay panel and speaker overlay panel into slot of middle bar on front panel.

e. Carefully install lower edge bar and secure to front panel by using four Phillips-head screws and lockwashers.

CAUTION

Upper overlay panel (plexiglas) is brittle; handle it carefully.

f. Carefully install upper overlay panel into slot of middle bar on front panel.

g. Carefully install upper edge bar and secure to front panel, using four Phillips-head screws and lockwashers.

h. Install all knobs on front-panel switches and controls.

i. Plug P3 and P4 into switch-mounting board A2A2 jacks A2J2 and A2J1, respectively.

j. Install front panel to unit, using four hexhead screws and attaching hardware.

k. Install unit top cover.

5-10.5.2.4. LED Status Display A2A1 Installation.

CAUTION

LED status display A2A1 must be positioned correctly and pushed straight into front panel slot.

a. Carefully push LED status display A2A1 into front-panel position.

b. Secure LED status display A2A1 to hexscrew posts and front panel, using four Phillips-head screws.

c. Plug P5 into LED status display A2A1 jack A2J3.

d. Attach front panel to unit, using four hexhead screws and attaching hardware.

e. Install unit top cover.

5-11. BANDPASS FILTER F-1531/TSC-60(V) (HF-8060). The following paragraphs contain instructions for performance testing, alignment, and repair of the HF-8060 Preselector. Testing is to a level necessary to isolate faults to a circuit card or group of cards.

WARNING

To avoid electrocution or personal injury, remove all conductive items (anything made of metal) from hands and arms before reaching into or working on electrical equipment.

CAUTION

Electrostatic discharge sensitive (ESDS) devices are used in this assembly. Static electricity can damage these devices. Special handling methods and materials must be used to prevent damage. Do not touch or remove any ESDS device or any assembled circuit board that has an ESDS device without properly grounding your body, test equipment, and all tools. Be thoroughly familiar with the handling procedures specified in T.O. 00-25-234. Move or store assembled circuit boards only in conductive (antistatic) bags. Do not touch the printed circuits or the connector pins on the board; handle the board by the edges only.

5-11.1. Test Points. Test points used in testing the HF-8060 are listed in table 5-21.

5-11.2. Performance Tests. Table 5-22 lists the test equipment required and the procedures for performance testing the HF-8060; figure 5-11 shows test-point locations in the HF-8060, and figure 5-12 is the HF-8060 disassembly diagram. Perform all steps in table 5-22 in the order listed. Continue through the numbered steps until a malfunction is discovered or the test is complete. If the unit fails to meet a performance standard, troubleshoot it by using the fault-isolation procedures in table 5-23. Perform the performance test periodically, as directed by the site maintenance supervisor. Between these periodic checks, perform the performance test after any repair or alignment or if the unit fails during operation.

Table 5-21. HF-8060 Test Points

Test point	Location	Circuit function
A1TP-1	Chassis assembly A1	Ground
A1TP-2	Chassis assembly A1	-15 V dc
A1TP-3	Chassis assembly A1	+ 24 V dc
A1TP-4	Chassis assembly A1	+ 5 V dc
A1TP-4	Chassis assembly A1	+ 15 V dc
A2TB-1	Parallel interface card A2	Ground
A2TP-2	Parallel interface card A2	Tune pulse
A2TP-3	Parallel interface card A2	Threshold
A2TP-4	Parallel interface card A2	Key line
A2TP-5	Parallel interface card A2	Tune start
A2TB-6	Parallel interface card A2	Self test
A2TP-7	Parellel interface card A2	20 MHz
A2TP-8	Parallel interface card A2	Preselector fault summary.
A2TP-9	Parallel interface card A2	Preselector rf overload
A3TP1	D/a converter card A3	Ground
A3TP2	D/a converter card A3	B0
A3TB3	D/a converter card A3	B1
A3TB-4	D/a converter card A3	B2
A3TB-5	D/a converter card A3	B3
A3TB-6	D/a converter card A3	B4
A3TB-7	D/a converter card A3	Equal U4
A3TB-8	D/a converter card A3	Ripple clock U5 counter
A3TB-9	D/a converter card A3	Q U8A F/F
A3TP-10	D/a converter card A3	Clock

Table 5-21. HF-8060 Test Points-Continued

Test point	Location	Circuit function
A3TP-11	D/a converter card A3	Equal U16
A3TP12	D/a converter card A3	Q U8B (MHz/100-kHz variable duty cycle)
A3TP-13	D/a converter card A3	Q U9B (kHz variable duty cycle)
A3TP-14	D/a converter card A3	Q U9A
A3TP-15	D/a converter card A3	Servo -8 V dc
A3TP-16	D/a converter card A3	Servo +5 V dc
A4TP-1	Tune logic card A4	Ground
A4TP-2	Tune logic card A4	3-pole filter overload detector
A4TP-3	Tune logic card A4	Tune initiate
A4TP-4	Tune logic card A4	Servo tuning complete
A4TP-5	Tune logic card A4	Tuning
A4TP-6	Tune logic card A4	Servo error
A4TB-7	Tune logic card A4	Timeout fault
A4TB-8	Tune logic card A4	Servo enable
A5TP-1	Servo amplifier card A5	Ground
A5TP-2	Servo amplifier card A5	Motor A output
A5TP-3	Servo amplifier card A5	+5 V dc
A5TP-4	Servo amplifier card A5	Motor B output
A5TP-5	Servo amplifier card A5	+24 V dc
A5TP-6	Servo amplifier card A5	Servo error
A5TP-7	Servo amplifier card A5	Bandswitch enable 4P (low=enable)5-8
A5TP-8	Servo amplifier card A5	Band sense 3P
A5TP-9	Servo amplifier card A5	Bandswitch enable (low=enable)
A6TP-1	Rf amplifier card A6	Ground

Table 5-21. HF-8060 Test Points-Continued

Test point	Location	Circuit function
A6TP-2	Rf amplifier card A6	2000-Hz square wave
A6TP-3	Rf amplifier card A6	Self test
A6TP-4	Rf amplifier card A6	Switched 24 V to transmitter amplifier
A6TP-5	Rf amplifier card A6	Transmit output detector
A6TP-6	Rf amplifier card A6	Transmit input detector
A6TP-7	Rf amplifier card A6	Transmit fault

Table 5-22. Performance Test Standard for HF-8060 Preselector

Test equipment required:

RF Signal Generator, HP-8640B-001
RF Voltmeter, Boonton 92C
with 50-ohm Adapter, Boonton 91-8B

Digital Voltmeter, Fluke 8520A

NOTE

Equivalent test equipment may be substituted for test equipment listed.

Preliminary instructions:

a. On power distribution panel, set MAIN POWER circuit breaker to on and press CONT/RCVR/PRESEL or EXCTR/PRESEL in (on).

b. Turn off power switch on preselector front panel.

c. Remove screws that hold the preselector to be tested in the rack, and slide preselector forward to permit access to rear connectors.

d. Disconnect cable from J2 and J4 (for receiver preselector) or J3 and J5 (for exciter preselector).

e. Remove eight screws from top cover of preselector, and remove cover.

f. Remove relay module assembly cover from preselector (figure 5-12).

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1			Turn on preselector and associated receiver or exciter.	POWER indicator on preselector lights and FAULT indicator is off.

Table 5-22. Performance Test Standard for HF-8060 Preselector-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
2			Momentarily connect a jumper between TP-7 and TP-1 (gnd) on rf amplifier card A6 (figure 5-11).	FAULT indicator on preselector and PRSEL FAULT indicator on associated receiver or exciter lights only when jumper is connected.
		Bandswitch operation check		
3			Set FREQUENCY KHZ switches on associated receiver or exciter to 01999.0.	
4			Set FREQUENCY KHZ switches on associated receiver or exciter to 02000.0.	Preselector bandswitch operates and FAULT lamp remains off. Wait 5 seconds before proceeding to next step to allow for timeout fault.
5			Repeat steps 3 and 4 while setting FREQUENCY-KHZ switches to the following positions: Step 3 — Step 4 03999.0 — 04000.0 07999.0 — 08000.0 15999.0 — 16000.0	Bandswitch operates and FAULT lamp remains off.
		Insertion gain check		
6			Set FREQUENCY-KHZ switch on associated receiver or exciter to 02000.0.	FAULT indicator remains off. Wait 5 seconds before proceeding to next step to allow for timeout fault.
7	a. Connect signal generator output to rf voltmeter with 50-ohm adapter. b. Adjust signal generator for 2.000-MHz output.			

Table 5-22. Performance Test Standard for HF-8060 Preselector-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
	Insertion gain check-Continued			
	c. Adjust signal generator output level to 100 mV as indicated on rf voltmeter. Note rf voltmeter indication in dB mW for reference.			
8	Disconnect rf voltmeter from signal generator and connect to J3 on preselector.			
9	Connect signal generator to J5 on preselector.			Rf voltmeter indicates 0 to 6 dB above input level noted in step 7c.
10	Repeat steps 6 through 9 for the following receiver/exciter and signal generator frequencies: MHz 03.000 03.999 04.000 07.999 08.000 15.999 16.000 29.999			
	Bypass check			
11			Set FREQUENCY-KHZ switches on associated receiver or exciter to 01999.0.	
12	a. Disconnect signal generator from J5. Disconnect rf voltmeter from J3.			
	b. Connect signal generator output to rf voltmeter with 50-ohm adapter.			

Table 5-22. Performance Test Standard for HF-8060 Preselector-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
		Bypass check-Continued		
	c. Adjust signal generator for 1.9999-MHz output.			
	d. Adjust signal generator output level to 100 mV. Note rf voltmeter indication in dB mW for reference.			
13	Disconnect rf voltmeter from signal generator and connect J3 on preselector			
14	Connect signal generator to J5 on preselector			Rf voltmeter shows 0 ±1 dB above level observed in step 12d.
		Selectivity check		
15			Set FREQUENCY-KHZ switches on associated receiver or exciter to 02300.0.	
16	Set signal generator for 2.300-MHz output.			
17	Adjust signal generator for 0-dB mW preselector output as indicated on rf voltmeter.			Rf voltmeter shows 0-dB mW preselector output.
18	Without adjusting output level, adjust signal generator frequency to 1.827 MHz.			Rf voltmeter shows more than 45 dB below level observed in step 17.
19	Without adjusting output level, adjust signal generator frequency to 2.530 MHz.			Rf voltmeter shows more than 45 dB below level observed in step 17.

Table 5-22. Performance Test Standard for HF-8060 Preselector-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
	Selectivity check-Continued			
20	Repeat steps 16 through 19 at the following frequencies: Step 16 — Step 18 — Step 19 6.0000 — 5.4000 — 6.6000 10.0000 — 9.0000 — 11.0000 14.0000 — 12.6000 — 15.4000 29.0000 — 26.1000 — 31.9000			
	Bandpass response check			
21	Disconnect rf voltmeter and signal generator from preselector.			
22	Set signal generator for 2.0000-MHz output at 100 mV, using rf voltmeter and 50-ohm adapter.			
23	Connect signal generator to J5 on preselector. Connect rf voltmeter to J3 on preselector			
24			Set FREQUENCY-KHZ switches on associated receiver or exciter to 02000.0.	After preselector completes tuning, note rf voltmeter indication.
25	Vary signal generator frequency between 1.9994 and 2.006 MHz.			Output level indicated on rf voltmeter stays within 2 dB of level noted in step 24.
	Transmit monitor check			
26	Disconnect signal generator and rf voltmeter from preselector.			
27	Set signal generator for 10.0-MHz output at 1.0 V rms, using rf voltmeter and 50-ohm adapter. Note rf voltmeter indication in dB mW for reference.			

Table 5-22. Performance Test Standard for HF-8060 Preselector-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
			Transmit monitor check-Continued	
28			Set FREQUENCY-KHZ switches on associated receiver or exciter to 02000.0.	
29	Connect signal generator to J2 on preselector. Connect rf voltmeter with 50-ohm adapter to J4 on preselector.		On associated exciter, set KEY switch to LOCK. If preselector is used with receiver, connect a jumper between TP-4 and TP-1 on parallel interface card A2 in preselector.	FAULT indicator on preselector lights after 5 seconds.
30			Set FREQUENCY-KHZ switches on associated receiver or exciter to 10000.0.	FAULT indicator on preselector goes off. Rf voltmeter should show 0 to 6 dB above input level noted in step 27.
31			Set FREQUENCY-KHZ switches on receiver to 01999.9.	Rf voltmeter should be within 1 dB of input level noted in step 27.
32			Set KEY switch on exciter to NORM. (For receiver, remove jumper from TP-1 and TP-4 on parallel interface card A6.)	
33	Disconnect signal generator and rf voltmeter form preselector.			
			Receive overload check	
34	Set signal generator for 10-MHz output at 100 mV, using rf voltmeter and 50-ohm adapter. Note rf voltmeter indication in dB mW for reference.			
35	Connect signal generator to J5 on preselector. Connect rf voltmeter through 50-ohm adapter to J3 on preselector.		On associated receiver or exciter, set FREQUENCY-KHZ switches to 10000.0.	

Table 5-22. Performance Test Standard for HF-8060 Preselector-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
		Receive overload check-Continued		
36	Connect a 10-kilohm resistor between TP-5 on power supply A1 and TP-2 on tune logic card A4.			OVERLOAD indicator on preselector lights.
37	Measure voltage level between TP-9 and TP-1 on parallel interface card A9.			10 ± 1 V dc
38	Observe rf output level indicated on rf voltmeter.			Less than 10 mV rms.
39	Disconnect 10-kilohm resistor from TP-2 on tune logic card.			Rf voltmeter shows 0 to 6 dB above input level in step 34. OVERLOAD indicator on preselector goes off.
40	Measure voltage level at TP-9 on parallel interface card A2.			0 V dc
41	Connect one lead of a 10-kilohm resistor to TP-2 of tune logic card A4. Momentarily touch other resistor lead to TP-5 on power supply A1 several times (6 maximum) until overload circuit is latched on.			OVERLOAD indicator on preselector remains on.
42			On associated exciter, set KEY switch to LOCK and then back to NORM. (For receiver, momentarily ground TP-4 of parallel interface card A2.)	OVERLOAD indicator on preselector goes off.
43	Repeat step 41.			
44			On associated receiver or exciter, set FREQUENCY-KHZ switches to 11000.0.	OVERLOAD indicator on preselector goes off.
45	Repeat step 41.			

Table 5-22. Performance Test Standard for HF-8060 Preselector-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
		Receive overload check-Continued		
46	Momentarily press RESET switch on preselector front panel.			OVERLOAD indicator on preselector goes off.
47	Disconnect all test equipment from preselector. Reinstall relay module assembly cover and top cover.			
48			Return equipment to normal operating configuration	

5-11.3. Fault Isolation Tests. Table 5-23 lists the test equipment required and the procedures for isolating faults to a circuit card or group of cards. Perform the performance tests in table 5-22 before performing those in table 5-23. Perform the steps in table 5-23 in the order listed unless directed otherwise in the procedures. After the unit has been repaired, test per table 5-22. Fault isolation procedures for the HF-8060 chassis are in table 5-24.

5-11.4. Alignment and Adjustment Procedures. The following paragraphs contain adjustment and alignment procedures for the HF-8060 Preselector. In order to perform these procedures, the top cover must be off the HF-8060. The following alignment and adjustment procedures require the use of a receiver to control the preselector.

5-11.4.1. 3-Pole Filter Assembly A8, Servo Drive Mechanical Alignment. Mechanically align servo drive as follows after any servo repairs.

CAUTION

Mechanical alignment of the servo drive is critical. Do not perform this procedure unless alignment or repair is necessary.

a. Press HF-8060 POWER switch off.

b. Check wormshaft and large gear for end play. If necessary, add shims to eliminate end play. Do not allow shaft to bind.

c. Verify that Oldham coupling between servo drive and tuning capacitor has a clearance of 0.1270 to 0.1778 mm (0.005 to 0.007 in.) between rod and groove on one side.

d. Turn coupling spline until yellow mark on large gear is opposite the black line on housing. Observe bottom of unit and continue to turn coupling spline until black mark on motor pinion is in line with the black housing mark. This position is the low-frequency alignment point.

e. Connect receiver control and rf cables to preselector.

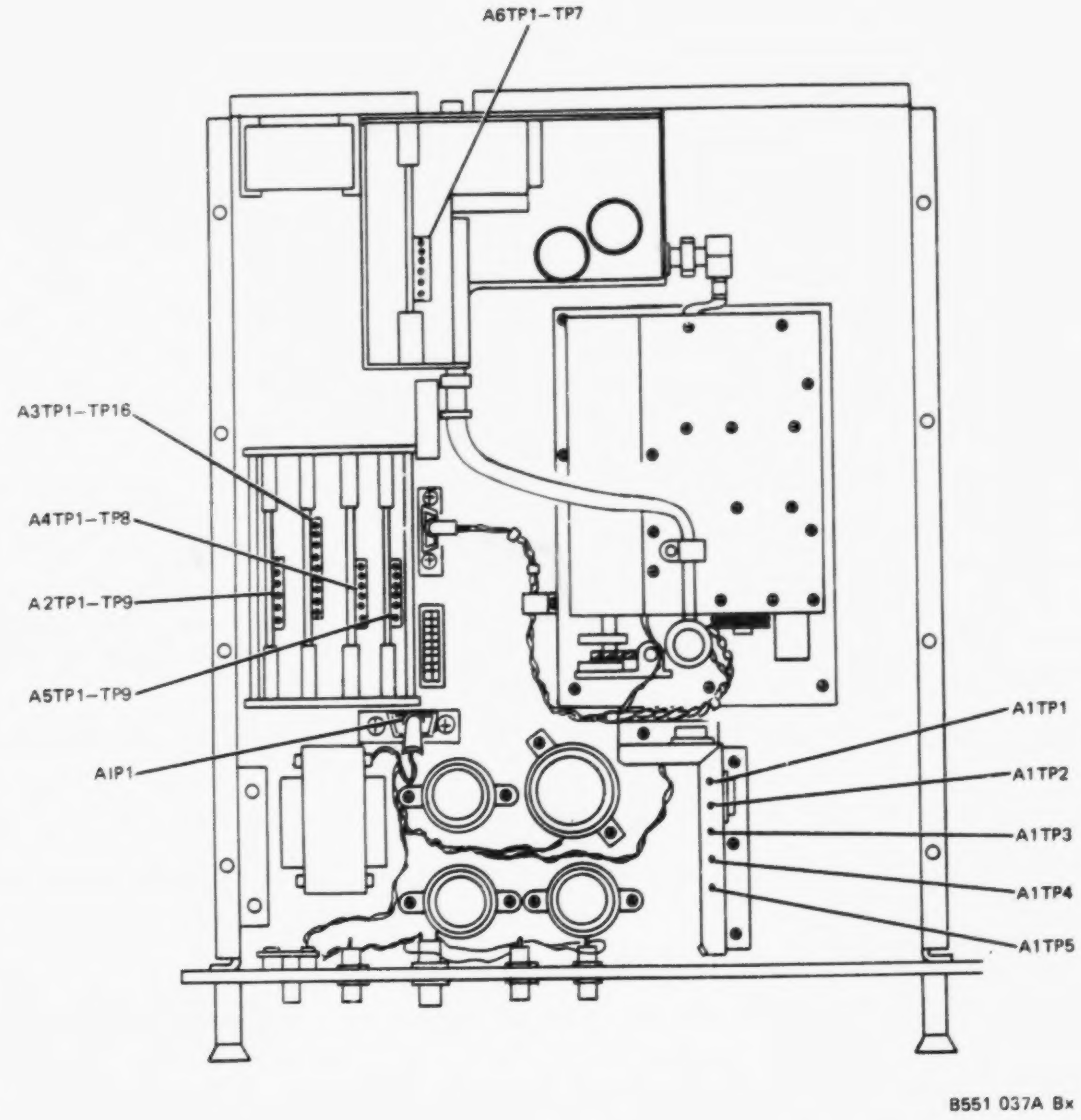

A6TP1–TP7
A3TP1–TP16
A4TP1–TP8
A2TP1–TP9
A5TP1–TP9
AIP1
A1TP1
A1TP2
A1TP3
A1TP4
A1TP5
B551 037A Bx

Figure 5-11. HF-8060 Subassembly and Test Point Locations

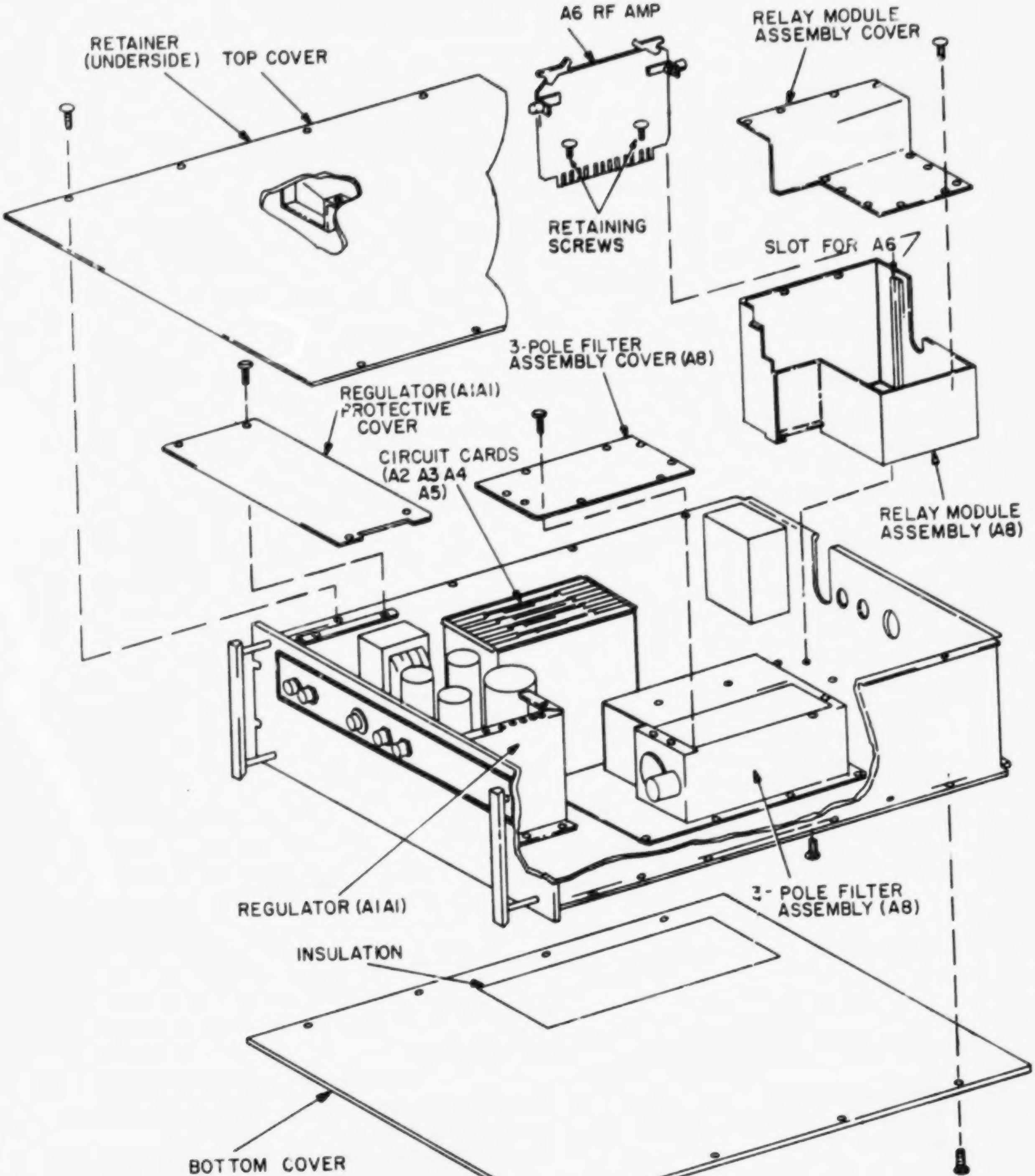

A6 RF AMP
RELAY MODULE ASSEMBLY COVER
RETAINER (UNDERSIDE)
TOP COVER
RETAINING SCREWS
SLOT FOR A6
3-POLE FILTER ASSEMBLY COVER (A8)
REGULATOR (A1A1) PROTECTIVE COVER
CIRCUIT CARDS (A2 A3 A4 A5)
RELAY MODULE ASSEMBLY (A8)
REGULATOR (A1A1)
3- POLE FILTER ASSEMBLY (A8)
INSULATION
BOTTOM COVER

Figure 5-12. HF-8060 Disassembly/Assembly Diagram

Table 5-23. HF-8060 Preselector Fault Isolation Tests

Test equipment required:

RF Signal Generator, HP-8640B-001	Digital Voltmeter, Fluke 8520A
RF Voltmeter, Boonton 92C	10-kilohm resistor
50-ohm adapter, Boonton 91-8B	Oscilloscope, Tektronix 464 DM44-01
100:1 Voltage Divider, Boonton 91-7C	
Adapter, Unterminated Type N, Boonton 91-16A	

NOTE

Equivalent test equipment may be substituted for test equipment listed.

Preliminary instructions:

a. Turn off POWER switch on preselector front panel.

b. Remove screws holding preselector to be tested in rack and slide preselector forward to permit access to rear connectors.

c. Disconnect cable from J2 and J4 (for receiver preselector) or J3 and J5 (for exciter preselector).

d. Remove eight screws from top cover or preselector, and remove cover.

e. Remove relay module assembly cover from preselector (figure 5-12).

Step	Procedure	Normal indication	If indication is abnormal
1	On power distribution panel, press circuit breaker (EXCTR/PRESEL or CONT/RCVR/PRESEL) for the preselector being tested in (on). Press HF-8060 POWER switch on.	POWER indicator on HF-8060 lights.	a. Check fuse F1. b. Check POWER indicator DS1.
2	Measure dc voltage at following power supply test points:		Perform chassis testing and troubleshooting procedures in table 5-24.
	TP1 (GND) and TP2	-14.4 to -15.4	
	TP1 and TP3	+22.5 to +25.5 V dc	
	TP1 and TP4	+4.5 to +5.3 V dc	
	TP1 and TP5	+14.2 to +15.6 V dc	
3	Momentarily connect a jumper between TP-7 and TP-1 (GND) on rf amplifier module A6.	a. FAULT indicator on preselector lights only while jumper is connected.	a. Check FAULT indicator DS3. b. Replace tune logic card A4.
		b. PRSEL FAULT indicator on associated receiver or exciter lights while jumper is connected.	Replace parallel interface card A2.

Table 5-23. HF-8060 Preselector Fault Isolation Tests-Continued

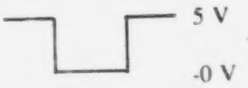
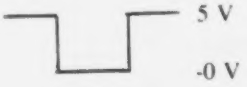
<table>
<tr><th>Step</th><th>Procedure</th><th>Normal indication</th><th>If indication is abnormal</th></tr>
<tr><td colspan="4">Bandswitch operation</td></tr>
<tr><td>4</td><td>Change FREQUENCY switches on associated receiver or exciter from 01999.0 to 02000.0.</td><td>Bandswitch operates and FAULT indicator does not light.</td><td></td></tr>
<tr><td>5</td><td>Connect a jumper between TP-3 and TP-1 on tune logic card A4. Measure voltage at TP-8 on servo card A5.</td><td>0 to 0.5 V dc</td><td>Replace servo card A5.</td></tr>
<tr><td>6</td><td>Remove jumper from TP-3 and TP-1 on tune logic card A4.</td><td></td><td></td></tr>
<tr><td>7</td><td>Set FREQUENCY-KHZ switches on associated receiver or exciter to a frequency in each band listed below. Measure voltage at d/a converter card A3 test point indicated for each band.
<table>
<tr><th>Band Freq (MHz)</th><th>A3 test point</th></tr>
<tr><td>Below 2.0000</td><td>TP-2</td></tr>
<tr><td>2.0000 to 3.9999</td><td>TP-3</td></tr>
<tr><td>4.0000 to 7.9999</td><td>TP-4</td></tr>
<tr><td>8.0000 to 15.9999</td><td>TP-5</td></tr>
<tr><td>16.0000 to 29.9999</td><td>TP-6</td></tr>
</table></td><td>2.4 to 5.5 V dc</td><td>a. Replace parallel interface card A2
b. Replace d/a converter card A3.</td></tr>
<tr><td>8</td><td>Change receiver or exciter FREQUENCY switches from 1 to 2 MHz while monitoring TP-3 on tune logic card A4 with oscilloscope.</td><td>
2-ms nominal negative-going pulse.</td><td>a. Replace parallel interface card A2.
b. Replace tune logic card A4.</td></tr>
<tr><td>9</td><td>Change receiver or exciter FREQUENCY switches from 1 to 2 MHz while using oscilloscope to monitor the bandswitch-enable pulse at TP-9 on servo card A5.</td><td>
Negative-going pulse.</td><td>Repeat step 8.</td></tr>
<tr><td>10</td><td>Repeat step 4 at the following frequency settings:
<table>
<tr><th>From</th><th>To</th></tr>
<tr><td>039990</td><td>040000</td></tr>
<tr><td>079990</td><td>080000</td></tr>
<tr><td>159990</td><td>160000</td></tr>
</table></td><td></td><td></td></tr>
</table>

Table 5-23. HF-8060 Preselector Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Insertion gain test		
11	a. Set FREQUENCY KHZ switches on associated receiver or exciter to 02000.0.		
	b. Connect signal generator output to rf voltmeter with 50-ohm adapter.		
	c. Adjust signal generator for 2.0000-MHz output.		
	d. Adjust signal generator output level to 100 mV as shown on the rf voltmeter. Note rf voltmeter indication in dB for reference in step 12.		
	e. Disconnect rf voltmeter from signal generator and connect voltmeter with 50-ohm load to J3 on preselector.		
12	Without adjusting output level, connect signal generator to J5 on preselector.	Rf voltmeter indicates 0 to 6 dB above level noted in step 11.	Proceed to step 13.
13	Disconnect cable from J7 on relay module A7 and connect rf voltmeter to J7 on card A7.	Rf voltmeter indicates 80 to 110 mV. If indication is normal, proceed to step 17.	Perform step 14.
14	a. Turn off POWER switch on preselector.		
	b. Extend tune logic card A4, using card extender		
	c. Press preselector POWER switch on		
15	a. Measure voltage at P1-26 on tune logic card A4.	+22 to +26 V dc	a. Replace tune logic card A4. b. Replace parallel interface card A2.
	b. Measure voltage at P1-29 on tune logic card A4.	0 to +1.2 V dc	Check relay module A7
	c. Measure voltage at P1-63 on tune logic card A4.	2.4 to 5.5 V dc	Replace servo card A5.

Table 5-23. HF-8060 Preselector Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Insertion gain test-Continued		
16	Turn preselector POWER switch off and remove card extender from tune logic card A4. Reinstall card in preselector. Turn preselector POWER switch on.		
17	Disconnect voltmeter and reconnect cable to J7 on relay module A7.		
18	a. Set FREQUENCY switches on associated receiver or exciter to 02000.0.		
	b. Disconnect cable from J8 on rf amplifier card A6.		
	c. Set signal generator for 2.00-MHz output at 10 mV, using rf voltmeter. Note rf voltmeter indication in dB for reference.		
	d. Connect signal generator to J8 on rf amplifier card A6.		
19	Use rf voltmeter to measure output at J3 on preselector.	6 to 12 dB above input level in step 18c.	Replace rf amplifier card A6.
20	Repeat steps 18 and 19 at the following frequencies (MHz): 2.0000 8.0000 3.9999 15.9999 4.0000 16.0000 7.9999 29.9999		
21	Disconnect signal generator from A6J8 and reconnect cable from 3-pole filter to A6J8.		
22	Repeat steps 11 and 12 at the following frequencies (MHz): 2.0000 8.0000 3.9999 15.9999 4.0000 16.0000 7.9999 29.9999		

Table 5-23. HF-8060 Preselector Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
		Bypass test	
23	Set FREQUENCY switches on associated receiver or exciter to 01999.0.		
24	a. Set signal generator for 1.9999-MHz output.		
	b. Use rf voltmeter to set signal generator output level to 100 mV. Note signal generator output level shown on rf voltmeter for reference in following step.		
	c. Connect signal generator to J5 and rf voltmeter to J3 on preselector.		
25	Observe preselector output level indicated on rf voltmeter.	Within 1 dB of level noted in step 24b. If indication is normal, proceed to step 30.	If indication is more than 1 dB below level noted in step 24b, perform steps 26 and 27. If more than 1 dB above level noted in step 24b, perform steps 26 and 28.
26	a. Turn off POWER switch on preselector.		
	b. Extend d/a converter card A3, using card extender.		
	c. Press preselector POWER switch to on.		
27	Measure voltage at P1-53 on d/a converter card A3 (figure 5-13).	0 to +0.5 V dc. If indication is normal, replace 3-pole filter assembly A8. Then proceed to step 29.	Replace d/a converter card A3. Then proceed to step 29.
28	Measure voltage at P1-45 on d/a converter card A3.	2.4 to 5.5 V dc. If indication is normal, replace rf amplifier card A6.	Replace d/a converter card A3.
29	a. Turn off POWER switch on preselector.		
	b. Remove card extender from card A3 and reinstall card in preselector.		
	c. Press preselector POWER switch on.		

Table 5-23. HF-8060 Preselector Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Selectivity test		
30	Set signal generator for 2.3000-MHz output.		
31	Set FREQUENCY switches on associated receiver or exciter to 02300.0.		
32	Adjust signal generator for 0-dB mW preselector output as shown on rf voltmeter connected to J3.		
33	Without adjusting signal level, adjust signal generator frequency to 1.827 MHz.	Rf voltmeter shows more than 45 dB below level observed in step 32.	a. Check servo drive mechanical alignment per paragraph 5-11.4.2. b. Check rf alignment of 3-pole filter per paragraph 5-11.4.2. c. Replace 3-pole filter module A8.
34	Without adjusting signal level, adjust signal generator frequency to 2.530 MHz.	Rf voltmeter shows more than 45 dB below level observed in step 32.	a. Perform procedures in paragraph 5-11.4.2, servo drive mechanical alignment. b. Check rf alignment of 3-pole filter per paragraph 5-11.4.2. c. Replace 3-pole filter module A8.
35	Repeat steps 30 through 34 at the following frequencies: Step 30 / Step 33 / Step 34 6.0000 / 5.4000 / 6.6000 10.0000 / 9.0000 / 11.0000 14.0000 / 12.6000 / 15.4000 29.0000 / 26.1000 / 31.9000		
	Bandpass response		
36	Set signal generator for 2.000-MHz output at 100 mV, using rf voltmeter with 50-ohm adapter.		

Table 5-23. HF-8060 Preselector Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Bandpass response-Continued		
37	Without adjusting signal, connect signal generator to J5 on preselector. Connect rf voltmeter to J3 on preselector.		
38	Set FREQUENCY switches on receiver or exciter to 02000.0. After preselector completes tuning, note rf voltmeter indication for reference in following step.		
39	Vary signal generator frequency between 1.9994 and 2.006 MHz.	Output level shown on rf voltmeter stays within ±2 dB of level noted in step 38.	a. Check servo drive mechanical alignment per paragraph 5-11.4.2. b. Check rf alignment of 3-pole filter per table 5-11.4.2. c. Replace 3-pole filter assembly A8.
40	Disconnect signal generator and rf voltmeter from preselector		
41	Set signal generator for 10-MHz, 1-V output. Measure signal generator output level in dB using rf voltmeter with 50-ohm adapter.		
42	Set FREQUENCY switches on associated receiver or exciter to 02000.0.		
43	Connect signal generator to J2 and rf voltmeter with 50-ohm adapter to J4 on preselector.		
44	Set KEY switch on exciter to LOCK. If a receiver is used, connect a jumper between TP-4 and TP-1 on parallel interface card A2.	FAULT indicator on preselector lights. If indication is normal, proceed to step 46.	Proceed to step 45.
45	Measure voltage at TP-6 on rf amplifier card A6.	+2.5 to +5.5 V. If indication is normal, replace rf implifier card A6.	Replace rely module A7.
46	Set FREQUENCY switches on associated receiver or exciter to 10000.0.	FAULT indicator on preselector goes off. If indication is normal, proceed to step 54.	Proceed to step 47.

Table 5-23. HF-8060 Preselector Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Bandpass response-Continued		
47	Measure voltage at TP-5 on rf amplifier card A6.	+2.5 to +5.5 V. If indication is normal, replace rf amplifier card A6.	Proceed to step 48.
48	Measure rf output at J4 on preselector.	0 to 6 dB higher than input signal. If indication is normal, replace relay module A7. Then proceed to step 54.	Proceed to step 49.
49	a. Press preselector POWER switch off. b. Extend parallel interface card A2 and tune logic card A4, using card extenders. c. Press preselector POWER switch on.		
50	Disconnect A8P2 from J8 on rf amplifier card A6 and measure 3- filter output at A8P2.	-9 ± dB mW. If indication is normal, replace rf amplifier card A6. Then reconnect P2 to J8 on card A6 and proceed to step 54.	Proceed to step 51.
51	Measure voltage at P1-61 on parallel interface card A2.	0 to +0.5 V. Proceed to step 52 if indication is normal.	Replace parallel interface card A2. Reconnect A8P2 to J8 on rf amplifier card A6. Then proceed to step 54.
52	Measure voltage at P1-26 on tune logic card A4 (figure 5-13).	0 to +2 V. Replace relay module A7 if indication is normal.	Replace tune logic card A4.
53	a. Press preselector POWER switch off. b. Remove card extenders from cards A2 and A4 and reinstall cards in preselector. Disconnect voltmeter from A8P2 and reconnect A8P2 to J8 on rf amplifier card A6. c. Press preselector POWER switch on.		
54	With rf voltmeter connected to J4, measure preselector output gain, from input level in step 41.	0 to 6 dB	Replace rf amplifier card A6.

Table 5-23. HF-8060 Preselector Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Bandpass response-Continued		
55	Set FREQUENCY switches on associated receiver or exciter to 01999.9. With voltmeter connected to J4, measure gain from level in step 41.	0 ± 1 dB	Replace rf amplifier card A6
56	Ket KEY switch on exciter to NORM. For receiver, remove jumper connected to TP-4 and TP-1 on parallel interface card A2.		
	Receive overload tests		
57	Set signal generator for 10-MHz output at 100 mV, using rf voltmeter and 50-ohm adapter.		
58	Connect signal generator to J5 on preselector. Connect rf voltmeter through 50-ohm adapter to J3 on preselector.		
59	On associated receiver or exciter, set FREQUENCY switches to 10000.0.		
60	Connect a 10-kilohm resistor between TP-5 on power supply A1 and TP-2 on tune logic card A4.	OVERLOAD indicator on preselector lights. If indication is normal, proceed to step 63.	Proceed to step 61.
61	a. Press preselector POWER switch off. b. Extend tune logic card A4, using card extender c. Press preselector POWER switch on. d. Connect 10-kilohm resistor between TP-5 on power supply A1 and TP-2 on tune logic card A4.		
62	Measure voltage at P1-46 on tune logic card A4 (figure 5-13).	0 ± 2 V dc. If indication is normal, replace OVERLOAD indicator DS2.	Replace tune logic card A4.
63	Measure voltage at TP-9 on parallel interface card A2.	9 to 11 V dc. If indication is normal, proceed to step 65.	Perform step 61 then proceed to step 64.

Table 5-23. HF-8060 Preselector Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
		Receive overload tests-Continued	
64	Measure voltage at P1-79 on tune logic card A4.	0 to 0.5 V dc. If indication is normal, replace parallel interface card A2.	Replace tune logic card A4.
65	Measure preselector rf output at J3.	Less than 10 mV rms.	Replace tune logic card A4.
66	Disconnect 10-kilohm resistor from TP-2 on tune logic card A4.	a. Rf voltmeter at J3 shows 0 to 6 dB above level in step 57.	Replace tune logic card A4.
		b. OVERLOAD indicator on preselector goes out.	Replace tune logic card A4.
67	Measure voltage at TP-9 on parallel interface card A2.	0 to 0.5 V dc. If indication is normal, proceed to step 69.	Proceed to step 68.
68	Perform step 61 if card A4 is not extended. Measure voltage at P1-79 on tune logic card A4.	+ 2.4 to + 5.5 V. If indication is normal, replace parallel interface card A2.	Replace tune logic card A4.
69	**NOTE** Perform this step if tune logic card A4 was extended in previous steps. a. Press preselector POWER switch off. b. Remove card A4 from card extender and reinstall card in preselector. c. Press preselector POWER switch on.		
70	Connect one lead of a 10-kilohm resistor to TP-2 on tune logic card A4. Momentarily touch other resistor lead to TP-5 on power supply A1 several times (6 maximum) until overload circuit latches on.	OVERLOAD indicator on preselector remains on.	Replace tune logic card A4.
71	Momentarily set KEY switch on exciter to LOCK and then back to NORM. (For receiver, momentarily ground TP-4 of parallel interface card A2.)	OVERLOAD indicator on preselector goes off.	Replace tune logic card A4.

Table 5-23. HF-8060 Preselector Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
	Receive overload tests-Continued		
72	Repeat step 70 and latch overload circuit on.	OVERLOAD indicator on preselector remains on.	
73	Set FREQUENCY SWITCH on associated receiver or exciter to 11000.0.	OVERLOAD indicator on preselector goes off.	Replace tune logic card A4.
74	Repeat step 70 and latch overload circuit on.	OVERLOAD indicator on preselector remains on.	
75	Momentarily press RESET switch on preselector.	OVERLOAD indicator on preselector goes off. If indication is normal, proceed to step 78.	Proceed to step 76.
76	a. Press preselector POWER switch off. b. Extend tune logic card A4, using card extender. c. Press preselector power switch on.		
77	While pressing RESET switch S3, measure voltage at P1-13 of tune logic card A4.	0 to 0.5 V dc. If indication is normal, replace tune logic card A4.	Replace RESET switch A1S3.
	a. Press preselector POWER switch off. b. Disconnect all test equipment from preselector. c. Reinstall relay module assembly cover and top cover on preselector. d. Restore equipment to normal operating configuration.		

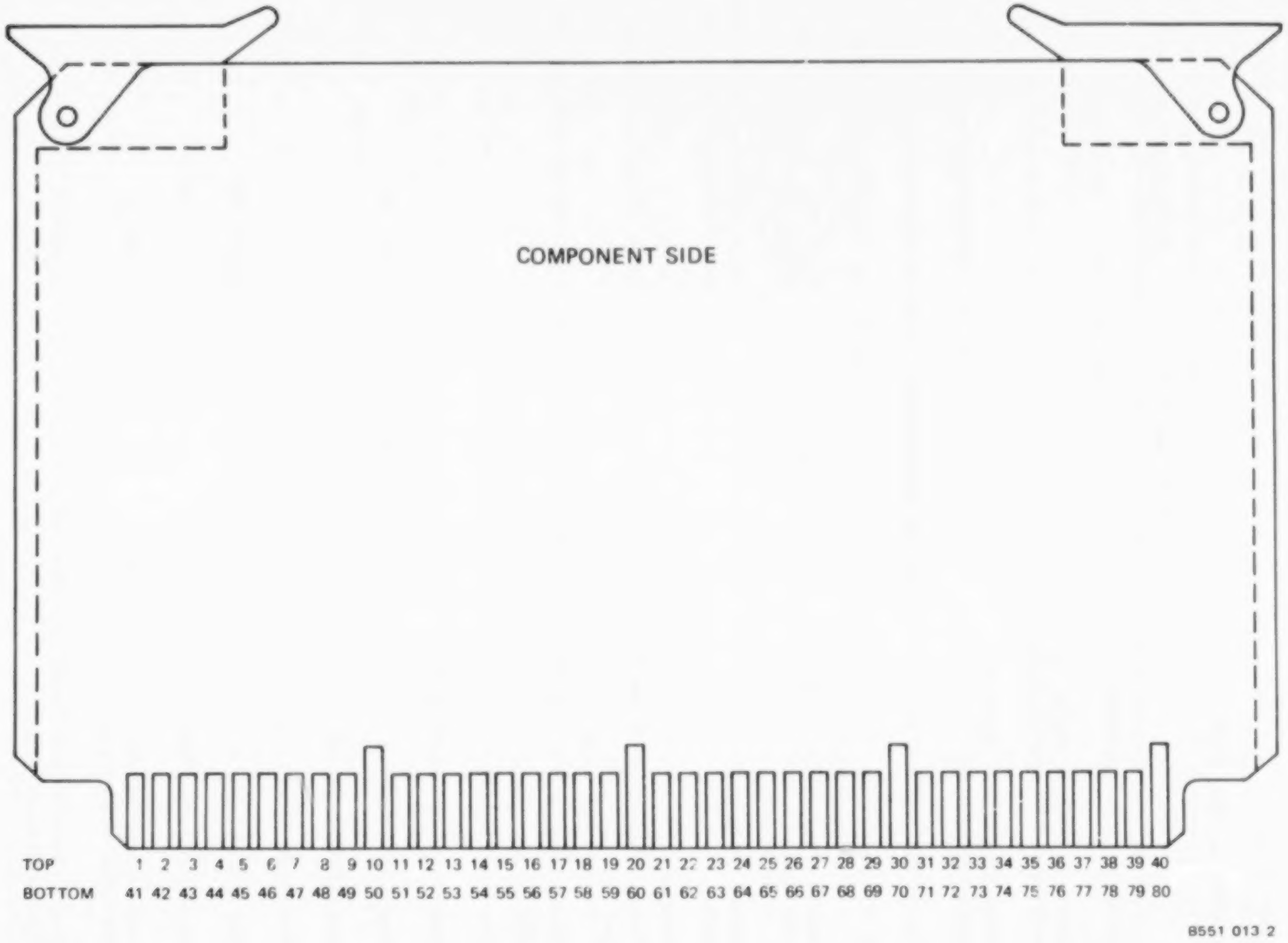

COMPONENT SIDE
TOP 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
BOTTOM 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
8551 013 2

Figure 5-13. HF-8060 Circuit Card Connector Pin Location

Table 5-24. HF-8060 Preselector Chassis A1 Fault Isolation Tests

Test equipment required:

Digital Voltmeter, Fluke 8520A

Step	Procedure	Normal indication	If indication is abnormal
1	Remove power from preselector		
2	Remove top cover and regulator A1A1 cover (figure 5-12) from preselector.		
3	Disconnect plug A1P1 (figure 5-11) from J13 on sideboard.		
4	Press POWER switch S2 on.	POWER indicator lights.	a. Check fuse F1. b. Check POWER indicator.
5	Measure voltage at TP4 (+) and TP1 (gnd).	+4.75 to +5.25 V	Check VR1, T1, and associated components.
6	Measure voltage at TP3 (+) and TP1 (gnd).	+22.5 to +25.5 V	Check +24-V dc regulator circuit translators and associated components.
7	Measure voltage at TP5 (+) and TP1 (gnd).	+14.25 to +15.75 V	Check VR3 and associated components.
8	Measure voltage at TP2 (-) and TP1 (gnd).	-14.25 to -15.75 V	Check VR4 and associated components.
9	Press POWER switch off.		
10	Connect a jumper from TP1 to P1-2.		
11	Press POWER switch on.	OVERLOAD lamp lights	Replace DS2
12	Press POWER switch off.		
13	Move jumper from P1-2 to P1-3.		
14	Press POWER switch on	FAULT lamp lights.	Replace DS3
15	Press POWER switch off.		
16	Check continuity between P1-4 and TP1 with RESET switch pressed.	0 ohms	Replace S3
17	Check continuity between P1-4 and TP1 with RESET switch released.	Open circuit.	Replace S3

Table 5-24. HF-8060 Preselector Chassis A1 Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
18	Disconnect test equipment.		
19	Reconnect A1P1 to J13 on sideboard.		
20	Reinstall regulator A1A1 cover and top cover on preselector.		

f. Turn on power to HF-8060 and receiver.

g. Set FREQUENCY switches on receiver to 02000.0 and wait for gear train to stop turning.

h. With gears at the low-frequency alignment point, measure voltage across follow potentiometer R1 (CW and CCW terminals). Voltage should be about 13 V dc. Compute 5 percent of the voltage measured across R1.

i. Measure voltage between CW and S terminal of R1. Loosen R1 mounting screws and turn R1 slightly to obtain a voltage between CW and S terminal that is within 2 mV of voltage computed in step h. Tighten R1 mounting screws.

j. Turn off power to HF-8060 and receiver.

k. Turn servo drive by hand and align yellow mark on large gear with black line on housing. Continue turning servo drive and observe that end-stop switch S2 operates after about one-half turn of the motor pinion.

l. Continue to turn servo drive while observing motor pinion. Verify that motor pinion rotates about two additional turns before capacitor drive reaches the mechanical end stop.

m. Turn servo drive by hand and align white mark on the large gear with black line on housing. Continue to turn servo drive and observe that end-stop switch S2 operates after about one-half turn of the motor pinion.

n. Continue to turn servo drive while observing motor pinion. Verify that motor pinion rotates about two additional turns before capacitor drive reaches the mechanical end stop.

5-11.4.2. RF Alignment of 3-Pole Filter Assembly A8. Perform the following procedures for rf alignment of 3-pole filter A8.

a. Remove bottom cover from the HF-8060.

CAUTION

Do not remove 3-pole filter A8 cover; removing the cover can damage the filter.

b. Turn on power to HF-8060 and receiver.

c. Set FREQUENCY switches on receiver to 02000.0 and wait for gear train to stop rotation.

d. Connect signal generator to HF-8060 connector J5. Connect rf voltmeter with 50-ohm adapter to HF-8060 connector J3. (Disconnect coaxial cable from receiver to HF-8060.)

e. Adjust signal generator for 2.000-MHz, 1-V rms output.

f. Verify that yellow mark on large gear is aligned with mark on housing.

g. Swamp all tuned circuits except the one being adjusted with 1-kilohm resistors at exposed points on tuning capacitor (figure 5-14).

h. Swamp tuned circuits Z2 (2, figure 5-14) and Z3 (1, figure 5-14) of assembly A8 with 1-kilohm resistors.

Keep resistor leads as short as possible.

i. Adjust tuned circuit Z1 (band 1) from bottom of unit, using a 0.1-hex (nonmagnetic) tool, for a maximum indication on rf voltmeter.

j. Swamp tuned circuits Z1 (3, figure 5-14) and Z2 (2, figure 5-14). Adjust Z3 (band 1) for maximum output indication on rf voltmeter.

k. Swamp tuned circuits Z1 (3, figure 5-14) and Z2 (2, figure 5-14). Adjust Z3 (band 1) for maximum output indication on rf voltmeter.

l. Repeat steps h., i., j., and k., and assure that further adjustments will not increase output indicated on voltmeter.

m. Set signal generator and receiver frequencies to 3.9999 MHz.

n. Observe that white mark on large gear is aligned with mark on housing.

o. Repeat steps h. through l. while adjusting C6, C7, and C9 instead of Z1, Z2, and Z3.

p. Repeat steps f. through o. until both ends of frequency band are tuned to produce a maximum output.

q. Repeat steps f. through p. to align frequency bands 2, 3, and 4 using band, frequency, and adjustment points as follows. Swamp Z1, Z4, Z7, and Z10 at point 3 of figure 5.14; swamp Z2, Z5, Z8, and Z11 at point 2 of figure 5-14; swamp Z3, Z6, Z9, and Z12 at point 1 of figure 5-14.

Band	Frequency (MHz)	Adjustment point
2	4.000	A8Z4, A8Z5, A8Z6
	7.999	A8C12, A8C13 A8C14
3	8.000	A8Z7, A8Z8, A8Z9
	15.999	A8C16, A8C17, A8C18
4	16.000	A8Z10, A8Z11, A8Z12
	31.999	A8C20, A8C21 A8C22

r. Disconnect signal generator and rf voltmeter from HF-8060. Turn off power to HF-8060. Remove swamping resistors and replace covers.

5-11.4.3. Receive Overload Adjustment. Adjust receive overload A4R42 as follows:

a. Turn on power to HF-8060 and receiver.

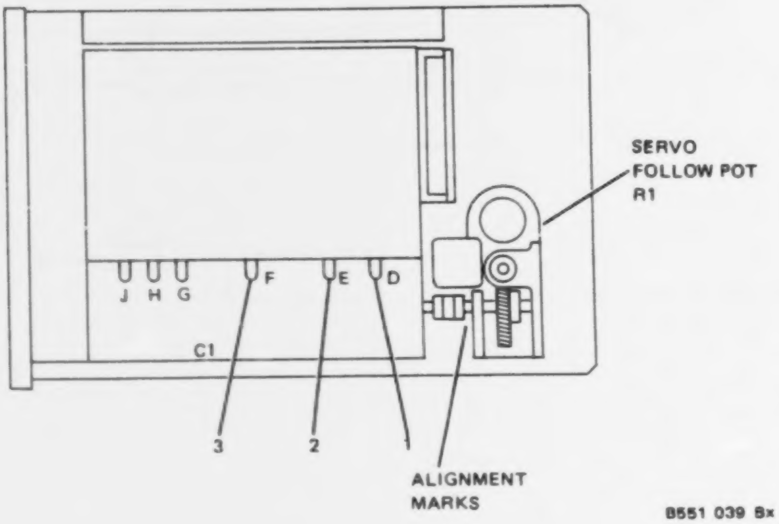


Figure 5-14. HF-8060 Test Point Locations

b. Set FREQUENCY switches on receiver to 2.300 MHz. Allow HF-8060 to complete tune cycle; then disconnect coaxial cable from HF-8060 connector J3.

CAUTION

If the preselector is not properly tuned, the following steps can damage the coil.

c. Connect test equipment as shown in figure 5-15.

d. Set signal generator for 2.530-MHz output at 0 volt.

e. On HF-8023 power amplifier, set controls as follows:

LOCAL/REMOTE switch to LOCAL

MANUAL/AUTO switch to AUTO

PA POWER switch to HIGH

PA KEY switch to OFF.

f. Set KEY switch on HF-8023 to ON. Slowly increase signal generator output until rf voltmeter indicates 210 V rms.

g. Adjust R2 on tune logic card A4 (figure 5-16) until OVERLOAD lamp on HF-8060 lights.

h. Reduce rf input until OVERLOAD lamp resets (goes off). The lamp should go off when rf voltmeter indication is within 110 ± 30 V rms.

i. Slowly increase signal generator output level until OVERLOAD lamp lights. OVERLOAD lamp should light when input voltage is 210 ± 10 V rms.

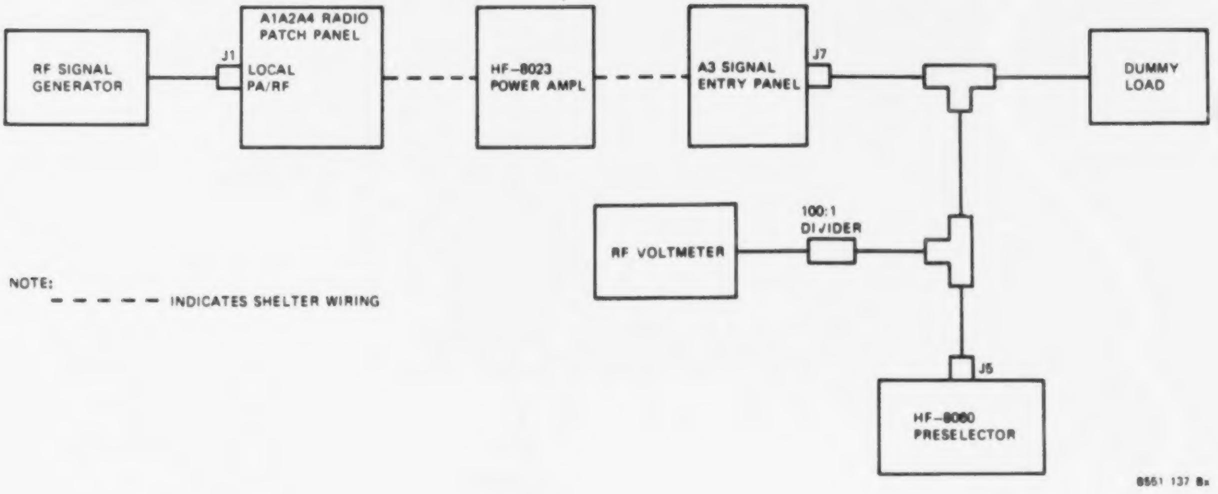

RF SIGNAL GENERATOR
J1
A1A2A4 RADIO PATCH PANEL
LOCAL PA/RF
HF-8023 POWER AMPL
A3 SIGNAL ENTRY PANEL
J7
DUMMY LOAD
100:1 DIVIDER
RF VOLTMETER
J5
HF-8060 PRESELECTOR
NOTE:
— — — — — INDICATES SHELTER WIRING
8551 137 8x

Figure 5-15. HF-8060 Preselector Overload Test Setup

j. Reduce signal generator output to 0 volt.

k. Set signal generator for 2.070-MHz output. Slowly increase rf input level to 200 V rms. OVERLOAD lamp should not light when rf input is 200 V rms.

l. Repeat steps j. and k. for the following receiver and signal generator frequencies. Note the frequency that has the lowest trip voltage for the overload circuit. Tune the receiver and signal generator to the frequencies that have the lowest trip voltage for the OVERLOAD indicator. Readjust A4R2 at that frequency so that OVERLOAD lamp lights when input voltage is 210 ± 10 V rms. This will ensure that the overload circuit will not trip at any frequency when the input voltage is less than 200 volts.

Signal generator frequency	Receiver frequency
2.530 MH	2.300 MHz
5.400 MH	6.000 MHz
6.600 MH	6.000 MHz
9.000 MH	10.000 MHz
11.0000	10.000 MHz
24.3000 MHz	27.000 MHz
29.7000	27.000 MHz

m. Reduce signal generator output to 0 volt. Disconnect all test equipment.

n. Restore equipment to normal operating configuration.

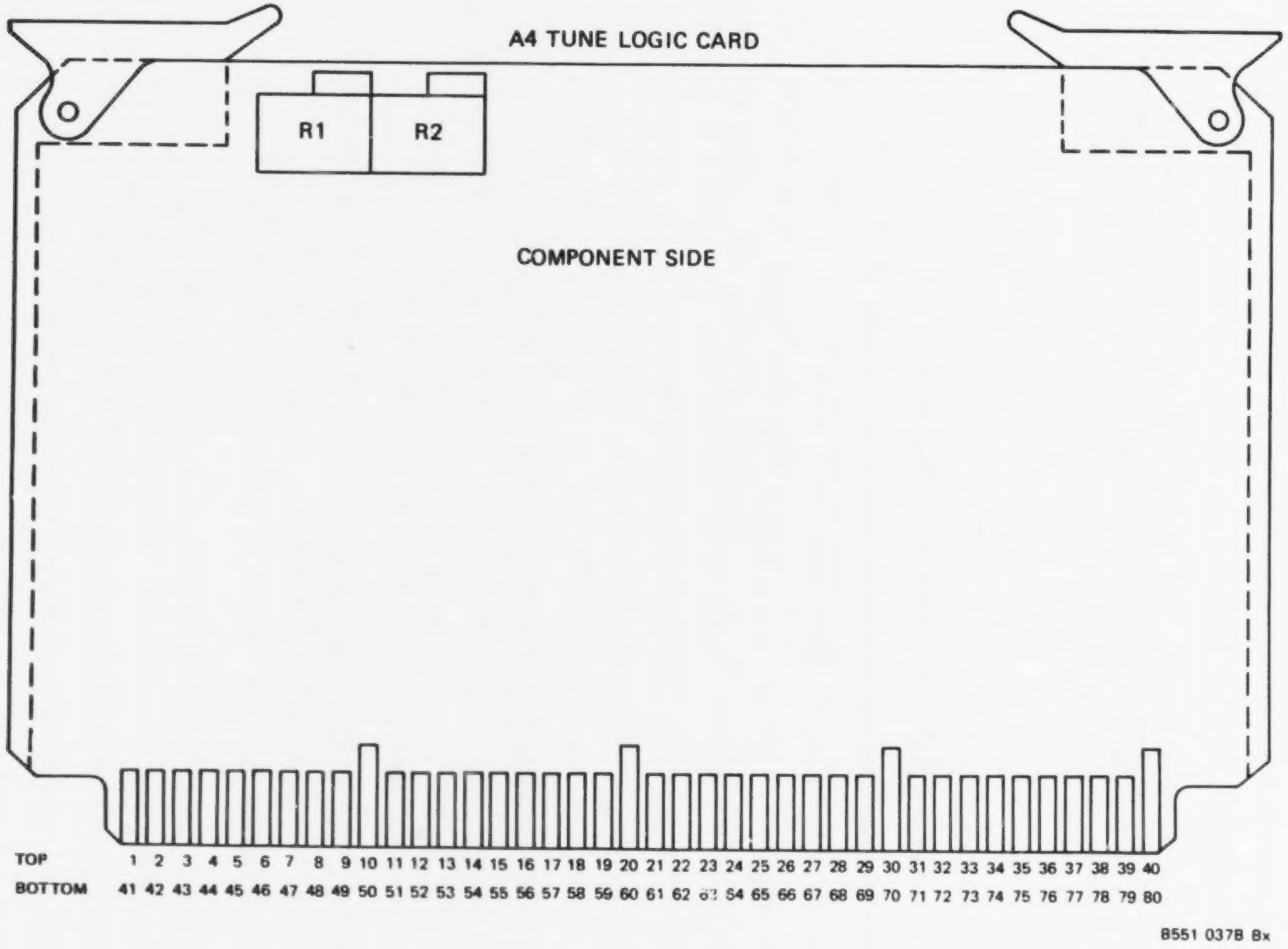

A4 TUNE LOGIC CARD
R1
R2
COMPONENT SIDE
TOP
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
BOTTOM
41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
B551 037B Bx

Figure 5-16. Tune Logic Card Adjustment Locations

o. Reduce rms input voltage to 0 V and turn off power for HF-8060 and amplifier. Disconnect all test equipment.

p. Connect coaxial cable from receiver to HF-8060 connector J3.

5-11.5. Disassembly/Assembly Procedures. Remove and replace assemblies in the HF-8060 as follows.

5-11.5.1. Precautions and General Techniques. When removing or replacing chassis-mounted components within the HF-8060, observe the following general techniques and precautions. Remove the power cable before disassembling any portion of the equipment. Disassembling the equipment with power cable connected may cause voltage transients that could damage solid-state devices. Identify all disconnected electrical wiring. Make note of color coding, placement of leads, and methods of applying insulation (if any) before unsoldering or removing any electrical parts.

5-11.5.2. Regulator A1A1 Removal. Remove regulator A1A1 as follows (refer to figure 5-12).

a. Remove top cover from preselector.

b. Remove four screws holding regulator protective cover in place, and remove cover.

c. Remove four screws holding regulator A1A1 from chassis for access to components.

5-11.5.3. Regulator A1A1 Replacement. Replace regualtor A1A1 as follows:

a. Install regulator A1A1 in mounting position in preselector. Secure with four screws.

b. Secure regulator protective cover on regulator with four mounting screws.

5-11.5.4. RF Amplifier A6 Removal. Remove rf amplifier A6 as follows:

a. Remove twelve screws holding the A6/A7 protective cover in place, and remove cover.

b. Remove coaxial cables from J8, J9, and J10.

c. Loosen two screws holding rf amplifier A6 to chassis.

d. Grasp circuit card extractor handles and pull up gently to loosen card from connector. When card is loose, lift A6 from circuit-card guide slot.

5-11.5.5. RF Amplifier A6 Replacement. Replace rf amplifier A6 as follows:

a. Install card in circuit-card guide slot. Gently push circuit-card into circuit card connector until card is firmly seated.

b. Tighten the two screws that hold rf amplifier to chassis.

c. Connect coaxial cables to J8, J9, and J10.

d. Install the A6/A7 protective cover with 12 screws.

5-11.5.6. Relay Module Relays K1 and K2 Removal. Remove relay K1 and K2 as follows:

a. Remove rf amplifier card A6 according to paragraph 5-11.5.4.

b. Remove twelve screws holding relay module cover in place, and remove cover.

c. Remove bottom cover from preselector.

d. Tag all wiring for identification; remove all wiring from relay.

e. Loosen two screws holding relay module P1 to sideboard.

f. While holding relay module, remove nine screws holding it to chassis. Remove relay module from chassis.

g. Remove two screws holding relay to relay module chassis, and remove relay.

5-11.5.7. Relay Module Relays K1 and K2 Replacement. Replace K1 or K2 as follows:

a. Mount relay in correct position in relay module with two mounting screws.

b. Install relay module in preselector chassis with nine mounting screws.

c. Tighten two screws that hold relay module to sideboard.

d. Connect all wiring to relay according to identification tags placed on wires during disassembly.

e. Install bottom cover on preselector.

f. Install relay module cover in place with 12 mounting screws.

g. Install rf amplifier card A6 according to paragraph 5-11.5.5.

5-12. FREDERICK 1290HL HIGH-LEVEL INTERFACE. The following paragraphs contain instructions for testing and repair of the 1290HL. Testing is to a level necessary to isolate faults to a circuit card.

5-12.1. Performance Tests. Table 5-25 lists the procedures for testing performance of the 1290HL; table 5-26 shows jackfield connections for the test. Perform all steps in table 5-25 in the order listed. Continue through the numbered steps until a malfunction is discovered or the test is complete. If the unit fails to meet a performance standard, troubleshoot the unit using the fault isolation procedures in paragraph 5-12.2. Perform the performance test after any repair or alignment.

5-12.2. Fault Isolation Tests. Table 5-27 lists the procedures required for isolating high-level interface card failures. Perform the procedures in the order listed. The high-level interface receives power from 106A-1 loop power supply A1A1A9 and 1290 FSK Modem A1A2A1. The power supply has an audible alarm to indicate power supply failure.

5-12.3. Loop Current Adjustment. Perform the following procedures to adjust loop current. Loop current must be checked and readjusted if necessary after subscriber teletypewriter lines are connected to system. Refer to paragraph 5-6.3 for system level current adjustments.

a. Ensure that 1290 MODEM/LOOP SUPPLY circuit breaker on power distribution panel is set to on. Set POWER switch on 1290 modem to ON.

b. On dc jackfield, patch TTY KEYER/CONVERTER 1 OUT LINE jack to 1290 HL TTY INTERFACE 1 IN LINE jack.

c. Patch LOOP MONITOR input jack (upper jack) on high-level interface meter panel to S jack on high-level interface card for channel 1 (A section).

d. On signal entry panel outside shelter, connect TTY TRANSMIT (DC INPUT) 1 binding posts to TTY RECEIVE (DC OUTPUT) 1 binding posts.

e. Set SIGNAL SENSE switch on converter A1A1A5A2 to —.

Table 5-25. 1290HL Performance Test

Test equipment required:

None

Preliminary instructions:

a. On secure patch panel A1A1A7, connect patch cable between SECURE BYPASS and TTY/RADIO jacks.

b. Ensure that 1290 MODEM/LOOP SUPPLY circuit breaker on power distribution panel is set to on.

c. Set POWER switch on 1290 FSK modem to ON.

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1			On teletypewriter, set controls as follows: PARITY to INHIB STATE to KSR REC MODE to $\overline{\text{LO}}$ $\overline{\text{DATA}}$ XMIT MODE to $\overline{\text{LO}}$ $\overline{\text{DATA}}$ BAUD RATE to 75 KG-30 CLOCK to INT CLOCK to + FIGURES to S SIGNAL to NRZ STOP BITS to 2. MODE to BAUDOT	
2			On dc jackfield, make the following patch connections: FSK MODEM 9 IN EQUIP jack to 1290 HL TTY INTERFACE 1 IN LINE jack.	

Table 5-25. 1290HL Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
2 (Cont)			1290 HL TTY INTERFACE 1 OUT LINE jack to FSK MODEM 9 OUT EQPT JACK	
3			On signal entry panel outside shelter, connect TTY TRANSMIT (DC INPUT) 1 binding posts to TTY RECEIVE (DC OUTPUT) 1 binding post.	
4			On tty, type in a line of alternating R's and Y's. After typing, press carriage return key.	Tty prints out a line of RY's identical to the line typed in.
5			Repeat steps 2 through 4 for remaining seven subscriber tty channels. Refer to table 5-26 for patching connections.	

Table 5-26. Jackfield Patching for 1290HL Performance Test

Channel	Dc jackfield		Signal entry panel	
	From	To	From	To
2	FSK MODEM 9 IN EQPT 1290 HI TTY INTERFACE 2 OUT LINE	1290 HL TTY INTERFACE 2 IN LINE FSK MODEM 9 OUT	TTY TRANSMIT (DC INPUT) 2	TTY RECEIVE (DC OUTPUT) 2
3	FSK MODEM 9 IN EQPT 1290 HL TTY INTERFACE 3 OUT LINE	1290 HL TTY INTERFACE 3 IN LINE FSK MODEM 9 OUT EQPT	TTY TRANSMIT (DC INPUT) 3	TTY RECEIVE (DC OUTPUT) 3
4	FSK MODEM 9 IN EQPT 1290 HL TTY INTERFACE 4 OUT LINE	1290 HL TTY INTERFACE 4 IN LINE FSK MODEM 9 OUT EQPT	TTY TRANSMIT (DC INPUT) 4	TTY RECEIVER (DC OUTPUT) 4

Table 5-26. Jackfield Patching for 1290HL Performance Test-Continued

Channel	Dc jackfield		Signal entry panel	
	From	To	From	To
5	FSK MODEM 9 IN EQPT 1290 HL TTY INTERFACE 5 OUT LINE	1290 HL TTY INTERFACE 5 IN LINE FSK MODEM 9 OUT	TTY TRANSMIT (DC INPUT) 5	TTY RECEIVER (DC OUTPUT) 5
6	FSK MODEM 9 IN EQPT 1290 HL TTY INTERFACE 6 OUT LINE	1290 HL TTY INTERFACE 6 IN LINE FSK MODEM 9 OUT EQPT	TTY TRANSMIT (DC INPUT) 6	TTY RECEIVE (DC OUTPUT) 6
7	FSK MODEM 9 IN EQPT 1290 HL TTY INTERFACE 7 OUT LINE	1290 HL TTY INTERFACE 7 IN LINE FSK MODEM 9 OUT EQPT	TTY TRANSMIT (DC INPUT) 7	TTY RECEIVE (DC OUTPUT) 7
8	FSK MODEM 9 IN EQPT 1290 HL TTY INTERFACE 8 OUT LINE	1290 HL TTY INTERFACE 8 IN LINE FSK MODEM 9 OUT EQPT	TTY TRANSMIT (DC INPUT) 8	TTY RECEIVE (DC OUTPUT) 8

Table 5-27. 1290HL Fault Isolation Test

Test equipment required:

None

Preliminary instructions:

a. Ensure that 1290 MODEM/LOOP SUPPLY circuit breaker on power distribution panel is turned on.

CAUTION

Before replacing high-level interface cards in this procedure, remove dc input to 1290HL to prevent blowing fuses.

Step	Procedure	Normal indication	If indication is abnormal
1	Ensure that POWER switch on 1290 FSK modem is set to ON.		

Table 5-27. 1290HL Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
2	On dc jackfield, make following patch connections: TTY KEYER/CONVERTER 1 OUT LINE jack to 1290 HL TTY INTERFACE 1 IN LINE jack 1290 HL TTY INTERFACE 1 OUT LINE jack to INPUT jack on voltmeter panel.		
3	Patch LOOP MONITOR jack (upper jack) on high-level interface meter panel to S jack on high-level interface card for channel 1 (A section).		
4	On signal entry panel outside shelter, connect TTY TRANSMIT (DC INPUT) 1 binding posts to TTY RECEIVE (DC OUTPUT) 1 binding posts.		
5	Set SIGNAL SENSE switch on converter A1A1A5A2 to —.	Meter on voltmeter panel shows +6 ±0.5 volts. Meter on 1290HL shows 60 ±6 mA.	a. If 1290HL meter does not show 60 ±60 mA, adjust loop current per paragraph 5-12-3. If current cannot be adjusted within limits, replace high-level interface card A1. b. If meter on voltmeter panel does not show +6 ±0.5 V, replace high-level interface card A1.
6	Set SIGNAL SENSE switch on converter A1A1A5A2 to +.	Meter on voltmeter panel shows -6 ±0.5 volts. Meter on 1290HL should indicate 0 mA.	Replace high-level interface card A1.
7	Disconnect patches made in previous steps		
8	On dc jackfield, make following patch connections: TTY KEYER/CONVERTER 1 OUT LINE jack to 1290 HL TTY INTERFACE 2 IN LINE jack 1290HL TTY INTERFACE 2 OUT LINE jack to INPUT jack on voltmeter panel.		

Table 5-27. 1290HL Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
9	Patch LOOP MONITOR input jack on high-level meter panel to S jack on high-level interface card for channel 2 (B section).		
10	On signal entry panel, connect TTY TRANSMIT (DC INPUT) 2 binding posts to TTY RECEIVE (DC OUTPUT) 2 binding posts.		
11	Set SIGNAL SENSE switch on converter A1A1A5A2 to —.	Meter on voltmeter panel shows +6 ±0.5 volts. Meter on 1290HL shows 60 mA ±6 mA.	Replace high-level interface card A1.
12	Set SIGNAL SENSE switch on converter A1A1A5A2 to +.	Meter on voltmeter panel shows -6 ±0.5 volts. Meter on 1290 shows 0 mA.	Replace high-level interface card A1.
13	Disconnect patches made in previous steps.		
14	On dc jackfield, make following patch connections: TTY KEYER/CONVERTER 1 OUT LINE jack to 1290 HL TTY INTERFACE 3 IN LINE jack 1290 HL TTY INTERFACE 3 OUT LINE jack to INPUT jack on voltmeter panel.		
15	Patch LOOP MONITOR input jack on high-level meter panel to S jack on high-level interface card for channel 3 (A section).		
16	On signal entry card, connect TTY TRANSMIT (DC INPUT) 3 binding posts to TTY RECEIVE (DC OUTPUT) 3 binding posts.		
17	Set SIGNAL SENSE switch on converter A1A1A5A2 to —.	Meter on voltmeter panel shows +6 ±0.5 volts. Meter on 1290HL shows 60 ±6 mA.	a. If 1290HL meter does not show 60 ±6 mA, adjust loop current per paragraph 5-12.3. If current cannot be adjusted within limits, replace high-level interface card A2.

Table 5-27. 1290HL Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
			b. If meter on voltmeter panel does not show +6 ±0.5 V, replace high-level interface card A2.
18	Set SIGNAL SENSE switch on converter A1A1A5A2 to +.	Meter on voltmeter panel shows -6 ±0.5 volts. Meter on 1290HL shows 0 mA.	Replace high-level interface card A2.
19	Disconnect patches made in previous steps.		
20	On dc jackfield, make following patch connections: TTY KEYER/CONVERTER 1 OUT LINE jack to 1290 HL TTY INTERFACE 4 IN LINE jack 1290 HL TTY INTERFACE 4 OUT LINE jack to INPUT jack on voltmeter panel.		
21	Patch LOOP MONITOR input jack on high-level meter panel to S jack on high-level interface card for channel 4 (B section).		
22	On signal entry panel, connect TTY TRANSMIT (DC INPUT) 4 binding posts to TTY RECEIVE (DC OUTPUT) 4 binding posts.		
23	Set SIGNAL SENSE switch on converter A1A1A5A2 to —.	Meter on voltmeter panel shows +6 ±0.5 volts. Meter on 1290HL shows 50 ±6 mA.	a. If 1290HL meter does not show 60 ±6 mA, adjust loop current per paragraph 5-12.3. If current cannot be adjusted within limits, replace high-level interface card A2. b. If meter on voltmeter panel does not show +6 ±0.5 V, replace high-level interface card A1.
24	Set SIGNAL SENSE switch on converter A1A1A5A2 to +.	Meter on voltmeter panel shows -6 ±0.5 volts. Meter on 1290HL shows 0 mA.	Replace high-level interface card A2.

Table 5-27. 1290HL Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
25	Disconnect patches made in previous steps.		
26	On dc jackfield, make following patch connections: TTY KEYER/CONVERTER 1 OUT LINE jack to 1290 HL TTY INTERFACE 5 IN LINE jack 1290 HL TTY INTERFACE 5 OUT LINE jack to INPUT jack on voltmeter panel.		
27	Patch LOOP MONITOR input jack on high-level meter panel to S jack on high-level interface card for channel 5 (A section).		
28	On signal entry panel, connect TTY TRANSMIT (DC INPUT) 5 binding posts to TTY RECEIVE (DC OUTPUT) 5 binding posts.		
29	Set SIGNAL SENSE switch on converter A1A1A5A2 to —.	Meter on voltmeter panel shows +6 ±0.5 volts. Meter on 1290HL shows 60 ±6 mA.	a. If 1290HL meter does not show 60 ±6 mA, adjust loop current per paragraph 5-12.3. If current cannot be adjusted within limits, replace high-level interface card A3. b. If meter on voltmeter panel does not show +6 ±0.5 V, replace high-level interface card A3.
30	Set SIGNAL SENSE switch on converter A1A1A5A2 to +.	Meter on voltmeter panel shows -6 ±0.5 volts. Meter on 1290 shows 0 mA.	Replace high-level interface card A3.
31	Disconnect patches made in previous steps.		
32	On dc jackfield, make following patch connections: TTY KEYER/CONVERTER 1 OUT LINE jack to 1290 HL TTY INTERFACE 6 IN LINE jack.		

Table 5-27. 1290HL Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
32 (Cont)	1290 HL TTY INTERFACE 6 OUT LINE jack to INPUT jack on voltmeter panel.		
33	Patch LOOP MONITOR input jack on high-level meter panel to S jack on high-level interface card for channel 6 (B section).		
34	On signal entry panel, connect TTY TRANSMIT (DC INPUT) 6 binding posts to TTY RECEIVE (DC OUTPUT) 6 binding posts.		
35	Set SIGNAL SENSE switch on converter A1A1A5A2 to —.	Meter on voltmeter panel shows +6 ±0.5 volts. Meter on 1290 shows 60 ±6 mA.	If 1290HL meter does not show 60 ±60 mA, adjust loop current per paragraph 5-12.3. If current cannot be adjusted within limits, replace high-level interface card A3.
36	Set SIGNAL SENSE switch on converter A1A1A5A2 to +.	Meter on voltmeter panel shows -6 ±0.5 volts. Meter on 1290HL shows 0 mA.	Replace high-level interface card A3.
37	Disconnect patches made in previous steps.		
38	On dc jackfield, make following patch connections: TTY KEYER/CONVERTER 1 OUT LINE jack to 1290 HL TTY INTERFACE 7 IN LINE jack 1290 HL TTY INTERFACE 7 OUT LINE jack to INPUT jack on voltmeter panel.		
39	Patch LOOP MONITOR input jack on high-level meter panel to S jack on high-level interface card for channel 7 (A section).		
40	On signal entry panel, connect TTY TRANSMIT (DC INPUT) 7 binding posts to TTY RECEIVE (DC OUTPUT) 7 binding posts.		

Table 5-27. 1290HL Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
41	Set SIGNAL SENSE switch on converter A1A1A5A2 to —.	Meter on voltmeter panel shows +6 ±0.5 volts. Meter on 1290HL shows 60 ±6 mA.	a. If 1290HL meter does not show 60 ±6 mA, adjust loop current per paragraph 5-12.3. If current cannot be adjusted within limits, replace high-level interface card A4. b. If meter on voltmeter panel does not show +6 ±0.5 V, replace high-level interface card A4.
42	Set SIGNAL SENSE switch on converter A1A1A5A2 to +.	Meter on voltmeter panel shows -6 ±0.5 volts. Meter on 1290HL shows 0 mA.	Replace high-level card A4.
43	Disconnect patches made in previous steps.		
44	On dc jackfield, make following patch connections: TTY KEYER/CONVERTER 1 OUT LINE jack to 1290 HL TTY INTERFACE 8 IN LINE jack 1290 HL TTY INTERFACE 8 OUT LINE jack to INPUT jack on voltmeter panel.		
45	Patch LOOP MONITOR input jack on high-level meter panel to S jack on high-level interface card for channel 8 (B section).		
46	On signal entry panel, connect TTY TRANSMIT (DC INPUT) 8 binding posts to TTY RECEIVE (DC OUTPUT) 8 binding posts.		
47	Set SIGNAL SENSE switch on converter A1A1A5A to —.	Meter on voltmeter panel shows +6 ±0.5 volts. Meter on 1290HL shows 60 ±6 mA.	a. If 1290HL meter does not show 60 ±6 mA, adjust loop current per paragraph 5-12.3. If current cannot be adjusted within limits, replace high-level interface card A4.

Table 5-27. 1290HL Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
47 (Cont)			b. If meter on voltmeter panel does not show +6 ±0.5 V, replace high-level interface card A4.
48	Set SIGNAL SENSE switch on converter A1A1A5A2 to +.	Meter on voltmeter panel shows -6 ±0.5 volts. Meter on 1290HL shows 0 mA.	Replace high-level interface card A4.

f. See if meter on high-level interface reads 60 ±6 mA. If not, adjust S adjustment on high-level interface card for channel 1 (A section) until meter reads 60 ±6 mA.

g. Repeat steps b. through f. for the remaining channels. For each channel, patch the TTY KEYER/CONVERTER 1 OUT LINE jack to the related 1290 HL TTY INTERFACE IN LINE jack and change patching at the signal entry panel for the channel being tested.

5-13. 1290 FSK MODEM. The following paragraphs contain instructions for testing and repair of the 1290HL. Testing is to a level necessary to isolate faults to a circuit card.

5-13.1. Performance Tests. Table 5-28 lists the procedures for testing performance of the 1290HL. Perform all steps in table 5-28 in the order listed. Continue through the numbered steps until a malfunction is discovered or the test is complete. If the unit fails to meet a performance standard, troubleshoot it with the fault-isolation procedures. Perform the performance tests after any repair or alignment.

5-13.2. Fault Isolation Tests. Table 5-29 lists the procedures for isolating 1290 modem circuit card failures. Perform the procedures in the order listed.

5-13.3. Adjustment Procedures. The following paragraphs contain adjustment procedures for the composite card, modulator cards, and demodulator cards in the 1290 FSK modem.

5-13.3.1. Modulator Card Output Level Adjustment. Adjust the output level of each modulator card in the 1290 FSK modem to the same level, as follows:

a. On composite card, set DBM meter switch to MON IN.

b. On tone keyer/converter shelves 1 and 2 (A1A1A5 and A1A1A6), set all tone converter SIGNAL SENSE switches to negative (-).

c. On modulator card under adjustment, set controls as follows:

MUTE switch off (switch in, green indication)

NORM/REV switch to NORM

COMP 1/COMP 2 switch to COMP 1.

d. Patch composite card MON IN jack to MON jack on modulator card under adjustment.

Table 5-28. 1290 FSK Modem Performance Test

Test equipment required:

None

Preliminary instructions:

a. On secure patch panel A1A1A7, connect patch cable between SECURE BYPASS and TTY/RADIO jacks.

b. Ensure that 1290 MODEM/LOOP SUPPLY circuit breaker on power distribution panel is set to on.

c Set POWER switch on 1290 FSK modem to ON.

d. On teletypewriter, set controls as follows:

PARITY to INHIB

STATE to KSR REC

MODE to $\overline{\text{LO DATA}}$

XMIT MODE to $\overline{\text{LO DATA}}$

BAUD RATE to 75

KG-30 CLOCK to INT

CLOCK to +

FIGURES to S

STOP BITS to 2

MODE to BAUDOT

e. On all modulator cards in 1290 modem, set controls as follows:

MUTE switch off (switch in, green indication)

NORM/REV switch to NORM

COMP 1/COMP 2 switch to COMP 1

f. On all demodulator cards in 1290 modem, set controls as follows:

HOLD switches ON (switch pressed in, blue indication)

NORM/REV switch to NORM

COMP 1/COMP 2 switch to COMP 1

g. On composite card in 1290 modem, set COMP 1 and COMP 2 switches to SSB.

Table 5-28. 1290 FSK Modem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1			On dc jackfield, patch FSK MODEM 9 IN EQPT jack to TTY KEYER/CONVERTER 1 OUT EQPT jack.	
2			On audio jackfield, patch 1290 COMPOSITE 1 OUT LINE jack to 1290 COMPOSITE 1 IN LINE jack.	
3			On dc jackfield, patch FSK MODEM 9 OUT EQPT jack to TTY KEYER/CONVERTER IN EQPT jack.	
4			On tty, type in a line of alternating R's and Y's. After typing, press carriage return key.	Tty prints out a line of RY's identical to the line typed in.
5			Disconnect jackfield patches made in previous steps.	
6			On dc jackfield, patch FSK MODEM 9 IN EQPT jack to TTY KEYER/CONVERTER 2 OUT EQPT jack.	
7			On audio jackfield, patch 1290 COMPOSITE 1 OUT LINE jack to 1290 COMPOSITE 1 IN LINE jack.	
8			On dc jackfield, patch FSK MODEM 9 OUT EQPT jack to TTY KEYER/CONVERTER 2 IN EQPT jack.	
9			On tty, type in a line of alternationg R's and Y's. After typing, press carriage return key.	Tty prints out a line of RY's identical to the line typed in.

Table 5-28. 1290 FSK Modem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
10			Disconnect jackfield patches made in previous steps.	
11			On dc jackfield, patch FSK MODEM 9 IN EQPT jack to TTY KEYER/CONVERTER 3 OUT EQPT jack.	
12			On audio jackfield, patch 1290 COMPOSITE 1 OUT LINE jack to 1290 COMPOSITE 1 IN LINE jack.	
13			On dc jackfield, patch FSK MODEM 9 OUT EQPT jack to TTY KEYER/CONVERTER 3 IN EQPT jack.	
14			On tty, type in a line of alternating R's and Y's. After typing, press carriage return key.	Tty prints out a line of RY's identical to the line typed in.
15			Disconnect jackfield patches made in previous steps.	
16			On dc jackfield, patch FSK MODEM 9 IN EQPT jack to TTY KEYER/CONVERTER 4 OUT EQPT jack.	
17			On audio jackfield, patch 1290 COMPOSITE 1 OUT LINE jack to 1290 COMPOSITE 1 IN LINE jack.	
18			On dc jackfield, patch FSK MODEM 9 OUT EQPT jack to TTY KEYER/CONVERTER 4 IN EQPT jack.	

Table 5-28. 1290 FSK Modem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
19			On tty, type in a line of alternating R's and Y's. After typing, press carriage return key.	Tty prints out a line of RY's identical to the line typed in.
20			Disconnect jackfield patches made in previous steps.	
21			On dc jackfield, patch FSK MODEM 9 IN EQPT jack to TTY KEYER/CONVERTER 5 OUT EQPT jack.	
22			On audio jackfield, patch 1290 COMPOSITE 1 OUT LINE jack to 1290 COMPOSITE 1 IN LINE jack.	
23			On dc jackfield, patch FSK MODEM 9 OUT EQPT jack to TTY KEYER/CONVERTER 5 IN EQPT jack.	
24			On tty, type in a line of alternating R's and Y's. After typing, press carriage return key.	Tty prints out a line of RY's identical to the line typed in.
25			Disconnect jackfield patches made in previous steps.	
26			On dc jackfield, patch FSK MODEM 9 IN EQPT jack to TTY KEYER/CONVERTER 6 OUT EQPT jack.	
27			On audio jackfield, patch 1290 COMPOSITE 1 OUT LINE jack to 1290 COMPOSITE 1 IN LINE jack.	

Table 5-28. 1290 FSK Modem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
28			On dc jackfield, patch FSK MODEM 9 OUT EQPT jack to TTY KEYER/CONVERTER 6 IN EQPT jack.	
29			On tty, type in a line of alternating R's and Y's. After typing, press the carriage return key.	Tty prints out a line of RY's identical to the line typed in.
30			Disconnect jackfield patches made in previous steps.	
31			On dc jackfield, patch FSK MODEM 9 IN EQPT jack to TTY KEYER/CONVERTER 7 OUT EQPT jack.	
32			On audio jackfield, patch 1290 COMPOSITE 1 OUT LINE jack to 1290 COMPOSITE 1 OUT LINE jack to 1290 COMPOSITE 1 IN LINE jack.	
33			On dc jackfield, patch FSK MODEM 9 OUT EQPT jack to TTY KEYER/CONVERTER 7 IN EQPT jack.	
34			On tty, type in a line of alternating R's and Y's. After typing, press carriage return key.	Tty prints out a line of RY's identical to the line typed in.
35			Disconnect jackfield patches made in previous steps.	
36			On dc jackfield, patch FSK MODEM 9 IN EQPT jack to TTY KEYER/CONVERTER 8 OUT EQPT jack.	

Table 5-28. 1290 FSK Modem Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
37			On audio jackfield, patch 1290 COMPOSITE 1 OUT LINE jack to 1290 COMPOSITE 1 IN LINE jack.	
38			On dc jackfield, patch FSK MODEM 9 OUT EQPT jack to TTY KEYER/CONVERTER 8 IN EQPT jack.	
39			On tty, type a line of alternating R's and Y's. After typing, press the carriage return key.	Tty prints out a line of RY's identical to the line typed in.
40			Disconnect jackfield patches made in previous steps and restore equipment to normal operating configuration.	

Table 5-29. 1290 FSK Modem Fault Isolation Test

Test equipment required:

Transmission Test Set, HP-3551A
Frequency Counter, HP-5335A

Preliminary instructions:

a. Perform procedures in table 5-28. If no channel meets performance standards, replace composite card in 1290 FSK modem. If a single channel fails to meet performance standards, perform the fault isolation procedures in this table.

b. On all modulator cards, set MUTE switches off (switch out, black indication). Set NORM/REV switch to NORM and COMP 1/COMP 2 switch to COMP 1.

c. On all demodulator, cards, set HOLD switches (switch in, blue indication). Set NORM/REV switch to NORM and COMP 1/COMP 2 switch to COMP 1.

d. On composite card, set COMP 1 and 2 switches to SSB.

Step	Procedure	Normal indication	If indication is abnormal
1	Connect send terminal of transmission test set to 1290 COMPOSITE 1 IN LINE jack on audio jackfield.		

Table 5-29. 1290 FSK Modem Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
2	On modulator card A2, set MUTE switch on (switch in, green indication).		
3	Connect TTY KEYER/CONVERTER 1 IN EQPT jack on dc jackfield to INPUT jack on voltmeter panel.		
4	Adjust transmission test set for 382 ±2-Hz output at 0 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts and MARK indicator on demodulator card A1 lights.	Replace demodulator card A1.
5	Adjust transmission test set for 467 ±2-Hz output at 0 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts and SPACE indicator on demodulator card A1 lights.	Replace demodulator card A1
6	Move patch cable from INPUT jack on voltmeter panel to TTY KEYER/CONVERTER 1 OUT EQPT jack on dc jackfield.		
7	Connect frequency counter to 1290 COMPOSITE 1 OUT LINE jack on audio jackfield.		
8	Adjust transmission test set for 382 ±2-Hz output at 0 dB mW.	Frequency counter shows 382 ±2 Hz.	Replace modulator card A2.
9	Adjust transmission test set for 467 ±2-Hz output at 0 dB mW.	Frequency counter shows 467 ±2 Hz.	Replace modulator card A2.
10	Disconnect cable patches made in previous steps.		
11	On modulator card A2, set MUTE switch off. On modulator card A4, set MUTE switch on (switch in, green indication).		
12	Connect TTY KEYER/CONVERTER 2 IN EQPT jack to INPUT jack on voltmeter panel.		
13	Adjust transmission test set for 722 ±2-Hz output at 0 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts. MARK indicator on demodulator card A3 lights.	Replace demodulator card A3

Table 5-29. 1290 FSK Modem Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
14	Adjust transmission test set for 807 ± 2-Hz output at 0 dB mW.	Meter on voltmeter panel shows -6 ± 0.5 volts. SPACE indicator on demodulator card A3 lights.	Replace demodulator card A3.
15	Move patch cable from INPUT jack on voltmeter panel to TTY KEYER/ CONVERTER 2 OUT EQPT jack on dc jackfield.		
16	Connect frequency counter to 1290 COMPOSITE 1 OUT LINE jack on audio jackfield.		
17	Adjust transmission test set for 722 ± 2-Hz output at 0 dB mW.	Frequency counter shows 722 ± 2 Hz.	Replace modulator card A4.
18	Adjust transmission test set for 807 ± 2-Hz output at 0 dB mW.	Frequency counter shows 807 ± 2 Hz.	Replace modulator card A4.
19	Disconnect cable patches made in previous steps.		
20	Connect transmission test set send terminal to 1290 COMPOSITE 1 IN LINE jack on audio jackfield.		
21	On modulator card A4,, set MUTE switch off. On modulator card A6, set MUTE switch on (switch in, green indication).		
22	Connect TTY KEYER/CONVERTER 3 IN EQPT jack to INPUT jack on voltmeter panel.		
23	Adjust transmission test set for 1062 ± 2-Hz output at 0 dB mW.	Meter on voltmeter panel shows +6 ± 0.5 volts. MARK indicator on demodulator card A5 lights.	Replace demodulator card A5..
24	Adjust transmission test set for 1147 ± 2-Hz output at 0 dB mW.	Meter on voltmeter panel shows -6 ± 0.5 volts. SPACE indicator on demodulator card A5 lights.	Replace demodulator card A5.
25	Move patch cable from INPUT jack on voltmeter panel to TTY KEYER/ CONVERTER 3 OUT EQPT jack on dc jackfield.		

Table 5-29. 1290 FSK Modem Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
26	Connect frequency counter to 1290 COMPOSITE 1 OUT LINE jack on audio jackfield.		
27	Adjust transmission test set for 1062 ±2-Hz output at 0 dB mW.	Frequency counter shows 1062 ±2 Hz	Replace modulator card A6.
28	Adjust transmission test set for 1147 ±2-Hz output at 0 dB mW.	Frequency counter shows 1147 ±2 Hz.	Replace modulator card A6.
29	Disconnect cable patches made in previous steps.		
30	Connect transmission test set send terminal to 1290 COMPOSITE 1 IN LINE jack on audio jackfield.		
31	On modulator card A6, set MUTE switch off. On modulator card A8, set MUTE switch on (switch in, green indication).		
32	Connect TTY KEYER/CONVERTER 4 IN EQPT jack to INPUT jack on voltmeter panel.		
33	Adjust transmission test set for 1402 ±2-Hz output at 0 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts. MARK indicator on demodulator card lights.	Replace demodulator card A7.
34	Adjust transmission test set for 1487 ±2-Hz output at 0 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts. SPACE indicator card lights.	Replace demodulator card A7
35	Move patch cable from INPUT jack on voltmeter panel to TTY KEYER/CONVERTER 4 OUT EQPT jack on dc jackfield.		
36	Connect frequency counter to 1290 COMPOSITE 1 OUT LINE jack on audio jackfield.		
37	Adjust transmission test set for 1402 ±2-Hz output at 0 dB mW.	Frequency counter shows 1402 ±2 Hz.	Replace modulator card A8.
38	Adjust transmission test set for 1487 ±2-Hz output at 0 dB mW.	Frequency counter shows 1487 ±2 Hz.	Replace modulator card A8.
39	Disconnect cable patches made in previous steps.		

Table 5-29. 1290 FSK Modem Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
40	Connect transmission test set send terminal to 1290 COMPOSITE 1 IN LINE jack on audio jackfield.		
41	On modulator card A8, set MUTE switch off. On modulator card A10, set MUTE switch on (switch in, green indication).		
42	Connect TTY KEYER/CONVERTER 5 IN EQPT jack to INPUT jack on voltmeter panel.		
43	Adjust transmission test set for 1742 ± 2-Hz output at 0 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts. MARK indicator on demodulator card A9 lights.	Replace demodulator card A9.
44	Adjust transmission test set for 1827 ± 2-Hz output at 0 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts. SPACE indicator on demodulator card A9 lights.	Replace demodulator card A9.
45	Move patch cable from INPUT jack on voltmeter panel to TTY KEYER/CONVERTER 5 OUT EQPT jack on dc jackfield.		
46	Connect frequency counter to 1290 COMPOSITE 1 OUT LINE jack on audio jackfield.		
47	Adjust transmission test set for 1742 ± 2-Hz output at 0 dB mW.	Frequency counter shows 1742 ± 2-Hz	Replace modulator card A10.
48	Adjust transmission test set for 1827 ± 2-Hz output at 0 dB mW.	Frequency counter shows 1827 ± 2 Hz.	Replace modulator card A10.
49	Disconnect cable patches made in previous steps.		
50	Connect transmission test set send terminal to 1290 COMPOSITE 1 IN LINE jack on audio jackfield.		
51	On modulator card A10, set MUTE switch off. On modulator card A12, set MUTE switch on (switch in, green indication).		
52	Connect TTY KEYER/CONVERTER 6 IN EQPT jack to INPUT jack on voltmeter panel.		

Table 5-29. 1290 FSK Modem Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
53	Adjust transmission test set for 2082 ±3-Hz output at 0 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts. MARK indicator on demodulator card A11 lights.	Replace demodulator card A11.
54	Adjust transmission test set for 2167 ±3-Hz output at 0 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts. SPACE indicator on demodulator card A11 lights.	Replace demodulator card A11.
55	Move patch cable from INPUT jack on voltmeter panel to TTY KEYER/ CONVERTER 6 OUT EQPT jack on dc jackfield.		
56	Connect frequency counter to 1290 COMPOSITE 1 OUT LINE jack on audio jackfield.		
57	Adjust transmission test set for 2082 ±3-Hz output at 0 dB mW.	Frequency counter shows 2082 ±3 Hz.	Replace modulator card A12.
58	Adjust transmission test set for 2167 ±3-Hz output at 0 dB mW.	Frequency counter shows 2167 ±3 Hz.	Replace modulator card A12.
59	Disconnect cable patches made in previous steps.		
60	Connect transmission test set send terminal to 1290 COMPOSITE 1 IN LINE jack on audio jackfield.		
61	On modulator card A12, set MUTE switch off. On modulator card A14, set MUTE switch on (switch in, green indication).		
62	Connect TTY KEYER/CONVERTER 7 IN EQPT jack to INPUT jack on voltmeter panel.		
63	Adjust transmission test set for 2422 ±3-Hz output at 0 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts. MARK indicator on demodulator card A13 lights.	Replace demodulator card A13.
64	Adjust transmission test set for 2507 ±3-Hz output at 0 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts. SPACE indicator on demodulator card A13 lights.	

Table 5-29. 1290 FSK Modem Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
65	Move patch cable from INPUT jack on voltmeter panel to TTY KEYER/CONVERTER 7 OUT EQPT jack on dc jackfield.		
66	Connect frequency counter to 1290 COMPOSITE 1 OUT LINE jack on audio jackfield.		
67	Adjust transmission test set for 2422 ± 3-Hz output at 0 dB mW.	Frequency counter shows 2422 ± 3 Hz.	Replace modulator card A14.
68	Adjust transmission test set for 2507 ± 3-Hz output at 0 dB mW.	Frequency counter shows 2507 ± 3 Hz.	Replace modulator card A14.
69	Disconnect cable patches made in previous steps.		
70	Connect transmission test set send terminal to 1290 COMPOSITE 1 IN LINE jack on audio jackfield.		
71	On modulator card A14, set MUTE switch off. On modulator card A16, set MUTE switch on (switch in, green indication).		
72	Connect TTY KEYER/CONVERTER 8 IN EQPT jack to INPUT jack on voltmeter panel.		
73	Adjust transmission test set for 2762 ± 3-Hz output at 0 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts. MARK indicator on demodulator card A15 lights.	Replace demodulator card A15.
74	Adjust transmission test set for 2847 ± 3-Hz output at 0 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts. SPACE indicator on demodulator card A15 lights.	Replace demodulator card A15.
75	Move patch cable from INPUT jack on voltmeter panel to TTY KEYER/CONNECTOR 8 OUT EQPT jack on dc jackfield.		
76	Connect frequency counter to 1290 COMPOSITE 1 OUT LINE jack on audio jackfield.		

Table 5-29. 1290 FSK Modem Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
77	Adjust transmission test set for 2762 ± 3-Hz output at 0 dB mW.	Frequency counter shows 2762 ± 3 Hz.	Replace demodulator card A16.
78	Adjust transmission test set for 2847 ± 3-Hz output at 0 dB mW.	Frequency counter shows 2847 ± 3 Hz.	Replace modulator card A16.
79	Disconnect test equipment. Restore equipment to normal operating configuration.		

e. On modulator card under adjustment, adjust R47 (figure 5-17) for a -4-dB mW indication on composite card DBM meter.

f. Disconnect patchcord from modulator card MON jack.

g. Set modulator card MUTE switch on (switch out, black indication).

h. Repeat steps c. through g. to adjust remaining modulator cards.

5-13.3.2. Composite Card Output Level Adjustment. Adjust the output level of the composite card on the 1290 FSK modem as follows. The composite card output should be about 0 dB mW when receiving inputs from all modulators.

a. Verify that all modulator cards are adjusted as described in paragraph 5-13.3.1.

b. On all modulator cards, set controls as follows:

MUTE switch off (switch in, green indication)

NORM/REV switch to NORM

COMP 1/COMP 2 switch to center (composite 1 and 2)

c. At audio jackfield A1A1A2, patch 1290 COMPOSITE 1 OUT LINE jack J21 to 1290 COMPOSITE 1 IN LINE jack J22.

d. Patch 1290 COMPOSITE 2 OUT LINE Jack J23 to 1290 COMPOSITE 2 IN LINE jack J24.

e. On composite card, set controls as follows:

COMP 1 OUT switch to SSB

COMP 2 OUT switch to SSB

DBM meter switch to COMP 1 OUT

NOTE

The composite 1 output-level adjustment potentiometer is on the card's front panel to the left of the COMP 1 OUT switch.

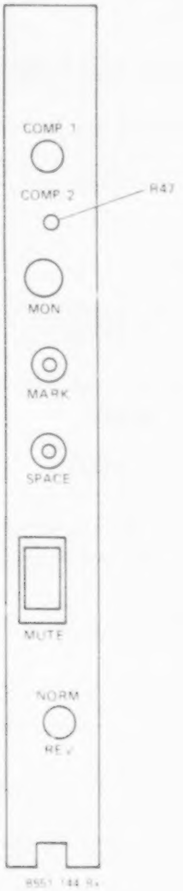


Figure 5-17. FSK Modem Modulator Card, Location of Adjustment

f. Adjust the composite 1 output-level potentiometer until the DBM meter reads 0 dB mW.

g. Set the DBM meter switch to COMP 2 OUT.

NOTE

The composite 2 output-level adjustment potentiometer is on the card's front panel to the left of the COMP 2 OUT switch.

h. Adjust the composite 2 output-level potentiometer until the DBM meter reads 0 dB mW.

i. Disconnect patchcords.

j. On all modulator cards, set controls as follows:

MUTE switch on (switch out, black indication)

COMP 1/COMP 2 switch to COMP 1.

5-13.3.3. 1290 Demodulator Mark-Hold Level Adjustment. Set the threshold at which the demodulator outputs a constant mark for any input lower than the threshold, as follows:

a. Connect send terminal of transmission test set to 1290 COMPOSITE 1 IN LINE jack on audio jackfield.

b. Connect TTY KEYER CONVERTER 1 IN EQPT jack on dc jackfield to INPUT jack on voltmeter panel.

c. On all demodulator cards, set HOLD switches off (switch in, green indication). Set NORM/REV switch to NORM and COMP 1/COMP 2 switch to COMP 1.

d. Set POWER switch on 1290 modem to OFF.

WARNING

To avoid electrocution or personal injury, remove all conductive items (anything made of metal) from hands and arms before reaching in or working on electrical equipment.

NOTE

When extending card A1, be sure card A1 and the card extender mate securely. The bottom card-edge pin of card A1 mates with the bottom pin connector on the card extender.

e. Extend demodulator card A1, using card extender.

f. Set POWER switch on 1290 modem to ON.

g. Adjust transmission test set for 467-Hz output at the desired mark hold level.

h. Adjust R30 on demodulator card until meter on voltmeter panel reads -6 ± 1 volts.

i. Slowly adjust R30 (figure 5-18) in the opposite direction until meter on voltmeter panel just changes to +6 ± 1 volts.

j. Repeat steps d. through g. for the remaining demodulators, using the frequencies and output jacks in table 5-30.

5-14. KEYER/CONVERTER SHELF. The following paragraphs contain instructions for testing and repair of the keyer/converter shelf. Testing is to a level necessary to isolate faults to an individual keyer or converter.

5-14.1. Performance Tests. Table 5-31 lists the procedures for testing performance of the keyer/converter shelf. Perform all steps in the order listed. Continue through the numbered steps until a malfunction is discovered or the test is complete. If the unit fails to meet a performance standard, troubleshoot the unit using the fault isolation procedures. Perform the performance tests after any repair or alignment.

5-14.2. Fault Isolation Tests. Table 5-32 lists the procedures for isolating keyer or converter module failures. Perform the procedures in the order listed.

5-14.3. Adjustment Procedures. The following paragraphs contain adjustment procedures for the tone converters and the tone keyers.

5-14.3.1. Keyer Output Level Adjustment. Perform the following procedures to adjust the output of the tone keyers.

a. Connect send terminal of transmission test set to TTY KEYER/CONVERTER 1 IN EQPT jack on audio jackfield.

b. On dc jackfield, patch TTY KEYER/CONVERTER 1 OUT LINE jack to TTY KEYER/CONVERTER 1 IN LINE jack.

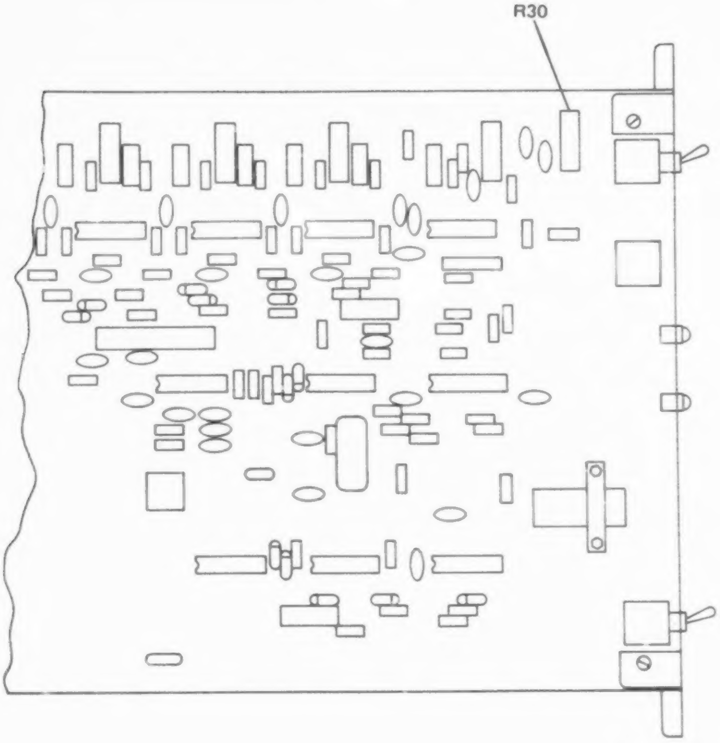


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Figure 5-18. FSK Modem Demodulator Card, Location of Adjustment

Table 5-30. Channel Frequencies for 1290 Demodulator Adjustments

Demodulator card	Channel	Test set frequency	Dc jackfield patch to input jack on voltmeter panel
A1	1	467 ±2 Hz	TTY KEYER/CONVERTER 1 IN EQPT jack
A3	2	807 ±2 Hz	TTY KEYER/CONVERTER 2 IN EQPT jack
A5	3	1147 ±2 Hz	TTY KEYER/CONVERTER 3 IN EQPT JACK
A7	4	1487 ±2 Hz	TTY KEYER/CONVERTER 4 IN EQPT jack
A9	5	1827 ±2 Hz	TTY KEYER/CONVERTER 6 IN EQPT jack

Table 5-30. Channel Frequencies for 1290 Demodulator Adjustments-Continued

Demodulator card	Channel	Test set frequency	Dc jackfield patch to input jack on voltmeter panel
A11	6	2167 ±3 Hz	TTY KEYER/CONVERTER 6 IN EQPT jack
A13	7	2507 ±3 Hz	TTY KEYER/CONVERTER 7 IN EQPT jack
A15	8	2847 ±3 Hz	TTY KEYER/CONVERTER 8 IN EQPT jack

Table 5-31. Keyer/Converter Shelf Performance Test

Test equipment required: None

Preliminary instructions:

a. On all tone converters, set SIGNAL SENSE switch to —.

b. On all tone keyers, set mode selector switch to LINE.

c. On power distribution panel A2A1, set the following circuit breakers to ON.

MAIN POWER

TONE KEYER/CONV

TTY

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1			On secure patch panel A1A1A7, patch SECURE BYPASS to TTY/RADIO jacks.	
2			On dc jackfield, patch TTY KEYER/ CONVERTER 1 IN LINE jack to FSK MODEM 9 IN EQPT jack.	
3			On audio jackfield, patch TTY KEYER/ CONVERTER 1 IN EQPT jack to TTY KEYER/ CONVERTER 1 OUT EQPT jack.	

Table 5-31. Keyer/Converter Shelf Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
4			On dc jackfield, patch TTY KEYER/ CONVERTER 1 OUT LINE jack to FSK MODEM 9 OUT EQPT jack.	
5			On tty, set controls as follows: REC MODE to LO DATA XMIT MODE to LO DATA BAUD RATE to 75 KG-30 CLOCK to INT CLOCK TO + FIGURES to S SIGNAL TO NRZ STOP BITS to 2 MODE to BAUDOT.	
6			On tty, type a line of alternating R's and Y's. Press carriage return key after typing.	Tty prints out a line of RY's identical to the line typed in.
7			Disconnect jackfield patching made in previous steps.	
8			On dc jackfield, patch TTY KEYER/ CONVERTER 2 IN LINE jack to FSK MODEM 9 IN EQPT jack.	
9			On audio jackfield, patch TTY KEYER/ CONVERTER 2 IN EQPT jack to TTY	

Table 5-31. Keyer/Converter Shelf Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
9 (Cont)			KEYER/ CONVERTER 2 OUT EQPT jack.	
10			On dc jackfield, patch TTY KEYER/ CONVERTER 2 OUT LINE jack to FSK MODEM 9 OUT EQPT jack.	
11			On tty, type in a line of alternating R's and Y's. Press carriage return key after typing.	Tty prints out a line of RY's identical to the line typed in.
12			Disconnect jackfield patching made in previous steps.	
13			On dc jackfield, patch TTY KEYER/ CONVERTER 3 IN LINE jack to FSK MODEM 9 IN EQPT jack.	
14			On audio jackfield, patch TTY KEYER/ CONVERTER 3 IN EQPT jack to TTY KEYER/ CONVERTER 3 OUT EQPT jack.	
15			On dc jackfield, patch TTY KEYER/ CONVERTER 3 OUT LINE jack to FSK MODEM 9 OUT EQPT jack.	
16			On tty, type in a line of alternating R's and Y's. Press carriage return key after typing.	Tty prints out a line of RY's identical to the line typed in.
17			Disconnect jackfield patching made in previous steps.	

Table 5-31. Keyer/Converter Shelf Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
18			On dc jackfield, patch TTY KEYER/ CONVERTER 4 IN LINE jack to FSK MODEM 9 IN EQPT jack.	
19			On audio jackfield, patch TTY KEYER/ CONVERTER 4 IN EQPT jack to TTY KEYER/ CONVERTER 4 OUT EQPT jack.	
20			On dc jackfield, patch TTY KEYER/ CONVERTER 4 OUT LINE jack to FSK MODEM 9 OUT EQPT jack.	
21			On tty, type in a line of alternating R's and Y's. Press carriage return key after typing.	Tty prints out a line of RY's identical to the line typed in.
22			Disconnect jackfield patching made in previous steps.	
23			On dc jackfield, patch TTY KEYER/ CONVERTER 5 IN LINE jack to FSK MODEM 9 IN EQPT jack.	
24			On audio jackfield, patch TTY KEYER/ CONVERTER 5 IN EQPT jack to TTY KEYER/ CONVERTER 5 OUT EQPT jack.	
25			On dc jackfield, patch TTY KEYER/ CONVERTER 5 OUT LINE jack to FSK MODEM 9 OUT EQPT jack.	

Table 5-31. Keyer/Converter Shelf Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
26			On tty, type in a line of alternating R's and Y's. Press carriage return key after typing.	Tty prints out a line of RY's identical to the line typed in.
27			Disconnect jackfield patching made in previous steps.	
28			On dc jackfield, patch TTY KEYER/ CONVERTER 6 IN LINE jack to FSK MODEM 9 IN EQPT jack.	
29			On audio jackfield, patch TTY KEYER/ CONVERTER 6 IN EQPT jack to TTY KEYER/ CONVERTER 6 OUT EQPT jack.	
30			On dc jackfield, patch TTY KEYER/ CONVERTER 6 OUT LINE jack to FSK MODEM 9 OUT EQPT jack.	
31			On tty, type in a line of alternating R's and Y's. Press carriage return key after typing.	Tty prints out a line of RY's identical to the line typed in.
32			Disconnect jackfield patching made in previous steps.	
33			On dc jackfield, patch TTY KEYER/ CONVERTER 7 IN LINE jack to FSK MODEM 9 IN EQPT jack.	
34			On audio jackfield, patch TTY KEYER/ CONVERTER 7 IN EQPT jack to TTY KEYER/ CONVERTER 7 OUT EQPT jack.	

Table 5-31. Keyer/Converter Shelf Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
35			On dc jackfield, patch TTY KEYER/ CONVERTER 7 OUT LINE jack to FSK MODEM 9 OUT EQPT jack.	
36			On tty, type in a line of alternating R's and Y's. Press carriage return key after typing.	Tty prints out a line of RY's identical to the line typed in.
37			Disconnect jackfield patching made in previous steps	
38			On dc jackfield, patch TTY KEYER/ CONVERTER 8 IN LINE jack to FSK MODEM 9 IN EQPT jack.	
39			On audio jackfield, patch TTY KEYER/ CONVERTER 8 IN EQPT jack to TTY KEYER/ CONVERTER 8 OUT EQPT jack.	
40			On dc jackfield, patch TTY KEYER/ CONVERTER 8 OUT LINE jack to FSK MODEM 9 OUT EQPT jack.	
41			On tty, type in a line of alternating R's and Y's. Press carriage return key after typing.	Tty prints out a line of RY's identical to the line typed in.
42			Disconnect jackfield patching made in previous steps.	

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Table 5-32. Keyer/Converter Shelf Fault Isolation Test

Test equipment required:

Transmission Test Set, HP-3551A

Frequency Counter, HP-5335A

Preliminary instructions:

a. On power distribution panel A2A1, set MAIN POWER and TONE KEYER/CONV circuit breakers to on.

Step	Procedure	Normal indication	If indication is abnormal
1	Connect send terminal of transmission test set to TTY KEYER/CONVERTER 1 IN EQPT jack on audio jackfield A1A1A2.		
2	Connect TTY KEYER/CONVERTER 1 OUT LINE jack on dc jackfield A1A1A3 to INPUT jack on voltmeter panel.		
3	On all tone keyers in both keyer/converter shelves, set mode switch to LINE.		
4	On all tone converters in both keyer/converter shelves set SIGNAL SENSE switch to (-).		
5	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts.	Replace converter card A1A5A2.
6	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts.	Replace converter card A1A5A2.
7	Disconnect dc jackfield TTY KEYER/CONVERTER 1 OUT LINE jack from voltmeter panel and connect to TTY KEYER/CONVERTER 1 IN LINE jack on dc jackfield.		
8	Connect frequency counter to TTY KEYER/CONVERTER 1 OUT EQPT jack 8 audio jackfield.		
9	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1232 ±2 Hz.	Replace keyer card A1A5A1.
10	Adjust transmission test set for 1317 ±2 Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1317 ±2 Hz.	Replace keyer card A1A5A1.
11	Disconnect patches made in previous steps.		

Table 5-32. Keyer/Converter Shelf Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
12	Connect send terminal of transmission test set to TTY KEYER/CONVERTER 2 IN EQPT jack on audio jackfield A1A1A2.		
13	Connect TTY KEYER/CONVERTER 2 OUT LINE jack on dc jackfield to INPUT jack on voltmeter panel.		
14	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts.	Replace converter card A1A5A4.
15	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts.	Replace converter card A1A5A4.
16	Disconnect dc jackfield TTY KEYER/CONVERTER 2 OUT LINE jack from voltmeter panel and connect to TTY KEYER/CONVERTER 2 IN LINE jack on dc jackfield.		
17	Connect frequency counter to TTY KEYER/CONVERTER 2 OUT EQPT jack on audio jackfield.		
18	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1232 ±2 Hz.	Replace card A1A5A3.
19	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1317 ±2 Hz.	Replace keyer card A1A5A3.
20	Disconnect patches made in previous steps.		
21	Connect send terminal of transmission test set to TTY KEYER/CONVERTER 3 IN EQPT jack on audio jackfield A1A1A2.		
22	Connect TTY KEYER/CONVERTER 3 OUT LINE jack on dc jackfield to INPUT jack on voltmeter panel.		
23	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts.	Replace converter card A1A5A6.
24	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts.	Replace converter card A1A5A6.

Table 5-32. Keyer/Converter Shelf Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
25	Disconnect dc jackfield TTY KEYER/CONVERTER 3 OUT LINE jack from voltmeter panel and connect to TTY KEYER/CONVERTER 3 IN LINE jack on dc jackfield.		
26	Connect frequency counter to TTY KEYER/CONVERTER 3 OUT EQPT jack on audio jackfield.		
27	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1232 ±2 Hz.	Replace keyer card A1A5A5.
28	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1317 ±2 Hz.	Replace keyer card A1A5A5.
29	Disconnect patches made in previous steps.		
30	Connect send terminal of transmission test set to TTY KEYER/CONVERTER 4 IN EQPT jack on audio jackfield A1A1A2.		
31	Connect TTY KEYER/CONVERTER 4 OUT LINE jack on dc jackfield to INPUT jack on voltmeter panel.		
32	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volt	Replace converter card A1A5A8.
33	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts.	Replace converter card A1A5A8.
34	Disconnect dc jackfield TTY KEYER/CONVERTER 4 OUT LINE jack from voltmeter panel and connect to TTY KEYER/CONVERTER 4 IN LINE jack on dc jackfield.		
35	Connect frequency counter to TTY KEYER/CONVERTER 4 OUT EQPT jack on audio jackfield.		
36	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1232 ±2 Hz.	Replace keyer card A1A5A8.
37	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1317 ±2 Hz.	Replace keyer card A1A5A7.

Table 5-32. Keyer/Converter Shelf Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
38	Disconnect patches made in previous steps.		
39	Connect send terminal of transmission test set to TTY KEYER/CONVERTER 5 IN EQPT jack on audio jackfield A1A1A2		
40	Connect TTY KEYER/CONVERTER 5 OUT LINE jack on dc jackfield to INPUT jack on voltmeter panel.		
41	Adjust transmission test set for 1232 ± 2-Hz output at 0 ± 0.5 dB mW.	Meter on voltmeter panel shows +6 ± 0.5 volts.	Replace converter card A1A6A2.
42	Adjust transmission test set for 1317 ± 2-Hz output at 0 ± 0.5 dB mW.	Meter on voltmeter panel shows -6 ± 0.5 volts.	Replace converter card A1A6A2.
43	Disconnect dc jackfield TTY KEYER/CONVERTER 5 OUT LINE jack from voltmeter panel and connect to TTY KEYER/CONVERTER 5 IN LINE jack on dc jackfield.		
44	Connect frequency counter to TTY KEYER/CONVERTER 5 OUT EQPT jack on audio jackfield.		
45	Adjust transmission test set for 1232 ± 2-Hz output at 0 ± 0.5 dB mW.	Frequency counter shows 1232 ± 2 Hz.	Replace keyer card A1A6A1.
46	Adjust transmission test set for 1317 ± 2-Hz output at 0 ± 0.5 dB mW	Frequency counter shows 1317 ± 2 Hz.	Replace keyer card A1A6A1.
47	Disconnect patches made in previous steps.		
48	Connect send terminal of transmission test set to TTY KEYER/CONVERTER 6 IN EQPT jack on audio jackfield A1A1A2.		
49	Connect TTY KEYER/CONVERTER 6 OUT LINE jack on dc jackfield to INPUT jack on voltmeter panel.		
50	Adjust transmission test set for 1232 ± 2-Hz output at 0 ± 0.5 dB mW.	Meter on voltmeter panel shows +6 ± 0.5 volts.	Replace converter card A1A6A4.
51	Adjust transmission test set for 1317 ± 2-Hz output at 0 ± 0.5 dB mW.	Meter on voltmeter panel shows -6 ± 0.5 volts.	Replace converter card A1A6A4.

Table 5-32. Keyer/Converter Shelf Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
52	Disconnect dc jackfield TTY KEYER/CONVERTER 6 OUT LINE jack from voltmeter panel and connect to TTY KEYER/CONVERTER 6 IN LINE jack on dc jackfield.		
53	Connect frequency counter to TTY KEYER/CONVERTER 6 OUT EQPT jack on audio jackfield.		
54	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1232 ±2 Hz.	Replace keyer card A1A6A3.
55	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1317 ±2 Hz.	Replace keyer card A1A6A3.
56	Disconnect patches made in previous steps.		
57	Connect send terminal of transmission test set to TTY KEYER/CONVERTER 7 IN EQPT jack on audio jackfield A1A1A2.		
58	Connect TTY KEYER/CONVERTER 7 OUT LINE jack on dc jackfield to INPUT jack on voltmeter panel.		
59	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows +6 ±0.5 volts.	Replace converter card A1AA6.
60	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts.	Replace converter card A1A6A6.
61	Disconnect dc jackfield TTY KEYER/CONVERTER 7 OUT LINE jack from voltmeter panel and connect to TTY KEYER/CONVERTER 7 IN LINE jack on dc jackfield.		
62	Connect frequency counter to TTY KEYER/CONVERTER 7 OUT EQPT jack on audio jackfield.		
63	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1232 ±2 Hz.	Replace keyer card A1A6A5.
64	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1317 ±0.5 volts.	Replace keyer card A1A6A5.

Table 5-32. Keyer/Converter Shelf Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
65	Disconnect patches made in previous steps.		
66	Connect send terminal of transmission test set to TTY KEYER/CONVERTER 8 IN EQPT jack on audio jackfield A1A1A2.		
67	Connect TTY KEYER/CONVERTER 8 OUT LINE jack on dc jackfield to INPUT jack on voltmeter panel.		
68	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts.	Replace converter card A1A6A8.
69	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Meter on voltmeter panel shows -6 ±0.5 volts.	Replace converter card A1A6A8.
70	Disconnect dc jackfield TTY KEYER/CONVERTER 8 OUT LINE jack from voltmeter panel and connect to TTY KEYER/CONVERTER 8 IN LINE jack on dc jackfield.		
71	Connect frequency counter to TTY KEYER/CONVERTER 8 OUT EQPT jack on audio jackfield.		
72	Adjust transmission test set for 1232 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1232 ±2 Hz.	Replace keyer card A1A6A7.
73	Adjust transmission test set for 1317 ±2-Hz output at 0 ±0.5 dB mW.	Frequency counter shows 1317 ±2 Hz.	Replace keyer card A1A6A7.

c. Connect receive terminal of transmission test set to TTY KEYER/CONVERTER 1 OUT EQPT jack on audio jackfield.

d. Adjust transmission test set for 1232 ±2-Hz output at 0 dB mW.

e. Set tone keyer mode switch to LINE.

f. Set transmission test set to measure receive level.

g. Adjust LEVEL ADJ on tone keyer A5A1 for 0-dB mW output indicated on transmission test set.

h. Repeat steps a. through g. for the remaining tone keyers in the keyer/converter shelves. Connect transmission test set terminals and patch dc jackfield to the appropriate jacks for the tone keyer to be adjusted.

5-14.3.2. Tone Converter Bias Adjustment. Adjust bias distortion on each tone converter as follows:

a. On MPC-1000T/LCO modem, set controls as follows:

ON/STANDBY to ON

MODE to MSREV

LEVEL at 9 o'clock

THRESHOLD at 12 o'clock

AFSK to A.

b. Tune MPC-1000T/LCO MARK LCO control for maximum horizontal indication on cross display.

c. Tune MPC-1000T/LCO SPACE LCO control for maximum vertical deflection on cross display.

d. On audio jackfield patch TTY KEYER/CONVERTER 1 OUT EQPT jack to TTY KEYER/CONVERTER 1 IN EQPT jack.

e. On dc jackfield patch FSK MODEM 9 OUT LINE jack to TTY KEYER/CONVERTER 1 IN LINE jack.

f. Connect oscilloscope input channel A to FSK MODEM 9 OUT MON jack on dc jackfield.

g. Connect oscilloscope input channel B to TTY KEYER CONVERTER 1 OUT LINE jack on dc jackfield.

h. Adjust oscilloscope traces until channel A trace is superimposed on channel B trace.

i. Adjust BIAS ADJUST until positive mark durations are of equal lengths (figure 5-19).

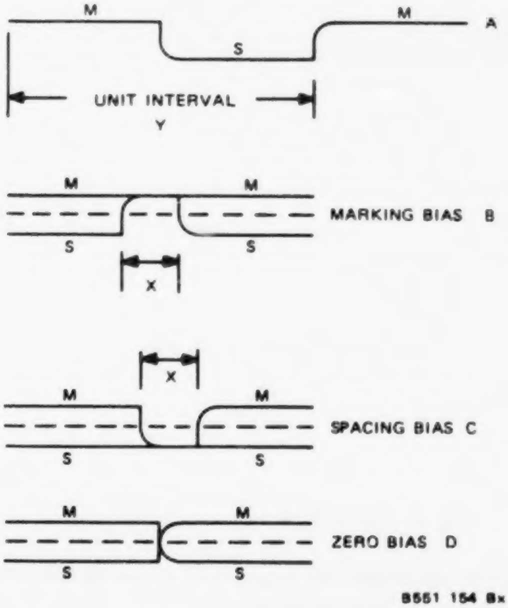


Figure 5-19. Tone Converter Bias Distortion Oscilloscope Patterns

5-15. ANTENNA COUPLER (HF-8040). The following paragraphs contain instructions for repair of the HF-8040. Monitor lights on the pa and exciter light to show a coupler fault. Figure 5-20 shows how to make the test adapter cable, and figure 5-21 shows component locations in the HF-8040. The test procedures for the HF-8040 isolate faults to a module or modules.

5-15.1. Fault Isolation Tests. Table 5-33 lists the procedures for isolating faults in the HF-8040. Before performing the fault isolation procedures, perform the following preliminary checks. If the fault still exists after performing the preliminary checks, then perform the fault isolation procedures in table 5-33.

WARNING

To prevent possibility of electrocution or personal injury, remove all conductive items (anything made of metal) from hands and arms before reaching into or working on electrical equipment.

a. Unscrew the manual pressure-relief valve at end of case to release air pressure. Tighten valve after pressure is released.

b. Remove cover from antenna coupler.

c. Check for proper connection at antenna insulator at end of case. See that antenna insulator is clean, free of paint, and not chipped or cracked.

d. See that the surface and threads of the two ground pads (located below the antenna insulator) are clean and free of paint.

5-15.2. Adjustment. Turning the HF-8040 on and off without tuning it can cause the C1 lead-screw assembly to disengage from the C1 gear. If this happens, perform the following procedures to realign the C1 lead-screw assembly (Refer to figure 5-22).

a. Screw the C1 lead-screw assembly into the capacitor, rotating the gear cw.

b. Being careful to avoid burring the gear teeth, mesh the C1 gear with its mating gear.

c. Connect multimeter, set to measure resistance, across C1. The multimeter should show continuity, because the capacitor will be shorted.

d. Turn the C1 gear cw until continuity is broken. Then turn the C1 gear back ccw until continuity is just made, and mark the position of the gear.

e. Rotate the C1 gear ccw 15 to 45 degrees from the mark made in step d.

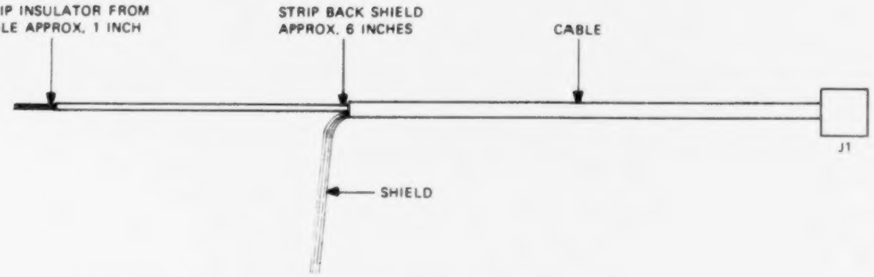
f. Hold the C1 gear in this position, and remove the three screws holding the C1 insulator block to the gear chassis.

g. Carefully lift C1 away from the gear chassis far enough to unmesh the C1 gear from its mating gear. The C1 lead-screw gear shaft will slide through the hole in the gear chassis to permit this.

h. Connect AN/PSM-6, set to measure resistance to P1-20 and P1-23.

i. Rotate the C1 mating gear cw until continuity is just made between P1-20 and P1-23. Several gear revolutions may be required due to the gear reduction.

j. Carefully remesh the C1 gear to its mating gear.


STRIP INSULATOR FROM CABLE APPROX. 1 INCH
STRIP BACK SHIELD APPROX. 6 INCHES
CABLE
J1
SHIELD

PARTS LIST		
PART	MIL P/N	QUANTITY
COAXIAL CABLE	MIL-C-17 (RG-213U)	2 FEET
N TYPE CONNECTOR	MIL-C-390121/01-0005	1

8551 157 8x

Figure 5-20. Coupler Test Adapter Cable, Fabrication Details

k. Secure C1 to the gear chassis with the three screws removed in step f.

(1) Rotate the C1 gear about five turns cw.

(2) Connect a continuity tester across C1 and rotate the C1 gear ccw until continuity is just made. Mark the position of the gear.

(3) Connect a continuity tester between P1-20 and P1-23.

(4) Turn the C1 gear ccw until continuity is just made between P1-20 and P1-23. The additional rotation of the gear from the mark made in step 2 should be between 15 and 90 degrees.

5-15.3. Disassembly/Assembly. The following paragraphs contain instructions for disassembly and assembly of the HF-8040. Refer to figure 5-21 for location of components of the HF-8040. The numbers in parentheses in the following paragraphs refer to items identified in figure 5-21.

5-15.3.1. Cover Removal. To remove cover from HF-8040, proceed as follows:

a. Loosen (unscrew) manual pressure relief valve on the end of the case. Retighten valve immediately.

b. Release 10 twist-lock fasteners.

c. Remove cover.

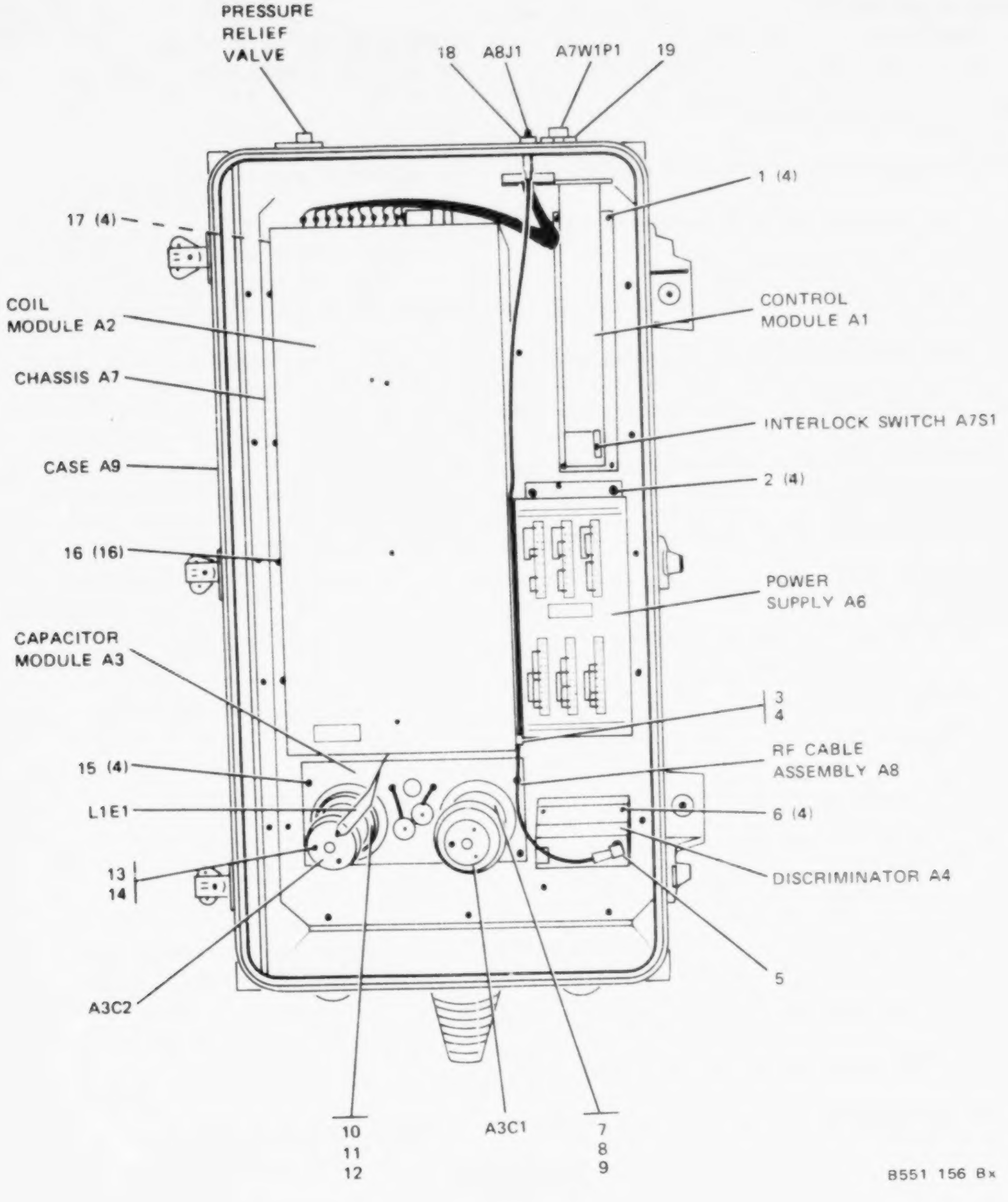

PRESSURE RELIEF VALVE
18
A8J1
A7W1P1
19
1 (4)
17 (4)
COIL MODULE A2
CONTROL MODULE A1
CHASSIS A7
INTERLOCK SWITCH A7S1
CASE A9
2 (4)
16 (16)
POWER SUPPLY A6
CAPACITOR MODULE A3
3
4
RF CABLE ASSEMBLY A8
15 (4)
L1E1
6 (4)
13
14
DISCRIMINATOR A4
A3C2
5
10
11
12
A3C1
7
8
9
B551 156 Bx

Figure 5-21. HF-8040 Component Location

Table 5-33. HF-8040 Coupler Fault Isolation Test

Test equipment required:

Digital Multimeter, Fluke 8520A	Transmission Test Set, HP-3551A
Adapter Cable (local fabrication, figure 5-20)	RF Attenuator, Bird 8329-300

Preliminary instructions:

a. Ensure that POWER AMPLIFIER circuit breaker on power distribution panel is set to off.

b. Connect antenna coupler control cable between signal entry panel ANT COUPLER jack J1 and J1 INPUT jack on HF-8040.

c. Connect rf cable between TRANSMIT ANTENNA jack on signal entry panel and RF INPUT jack J2 on HF-8040.

d. Make adapter cable in accordance with figure 5-20.

e. Disconnect cable connecting antenna to coupler on antenna coupler assembly.

f. Connect dummy load to antenna cable, using the adapter cable made in step d. (Connect shield of adapter cable to ground lug on antenna coupler. Connect adapter cable conductor to antenna terminal on coupler.)

g. Loosen (unscrew) manual pressure-relief valve on the end of the case. Retighten valve immediately.

h. Remove cover from HF-8040 coupler.

i. Set HF-8014A exciter controls as follows:

PWR to OFF

CONT to LCL

KEY to NORM

MODE to ISB

PA PWR to OFF

PILOT CARR to OFF

A1 LINE CHANNEL switch to LINE.

All other channel enable switches to OFF.

j. Use appropriate device to defeat interlock switch A7S1 on coupler and hold it closed.

WARNING

230 V ac is present inside the HF-8040 with power applied. Use extreme care in performing the following procedures. Death on contact may result if personnel fail to observe safety precautions.

k. On power distribution panel, press EXCTR/PRESEL circuit breakers in (ON).

l. On preselector A1A3A7, press POWER switch in (ON).

Table 5-33. HF-8040 Coupler Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
1	On power distribution panel, set POWER AMPLIFIER circuit breaker to ON.		
2	On HF-8023 pa, set LOCAL/REMOTE switch to REMOTE.		
3	Station one technician in shelter and one technician outside shelter at coupler location.		
4	On HF-8031 power supply, set circuit breakers to ON in following order: MAIN POWER LOW VOLTAGE 50/40 VDC-A 50/40 VDC-B 50/40 VDC-C 50/40 VDC-D 35 VDC	Coil L1 of module A2 and capacitors C1 and C2 of capactitor module A3 drive to home position. Solenoid switch plunger makes contact until coil stops; then releases. If indications normal, proceed to step 6.	a. If neither coil L1 of module A2 nor capacitors C1 and C2 of capacitor module A3 drive, perform step 5. If coil L1 of module does not drive and capacitors C1 and C2 drive, replace coil module A2 and repeat step 4. If coil module A2 still doesn't drive, replace control module A1 and repeat step 4. b. If coil module A2 drives and capacitors C1 and C2 do not drive, replace capacitor module A3 and repeat step 4. If capacitors still don't drive, replace control module A1 and repeat step 4.
5	Press exciter power switch to on. Change setting of FREQUENCY KHZ thumbwheels.	Coil L1 of module A2 and capacitors C1 and C2 of capacitor module A3 drive to home position. If indications are normal, replace control module A1 and repeat step 4.	Proceed to step 6.
6	a. On HF-8032 power supply, set all circuit breakers to OFF. **CAUTION** Do not remove or replace modules with power applied to coupler. Damage to components may result. Coupler power is applied from HF-8031.		

Table 5-33. HF-8040 Coupler Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
	b. Remove control module A1 from HF-8040.		
	c. On HF-8032, set MAIN POWER and LOW VOLTAGE circuit breakers to ON.		
	WARNING 230 V ac is present inside the HF-8040 coupler with power applied. Use extreme care in performing the following procedures. Death on contact may result if personnel fail to observe safety precautions.		
	d. Use digital multimeter to measure voltage at following points of test. Use J4-33 as reference (ground):		Replace power supply A6 and repeat step 4.
	J4-28	-12 ±2 V dc	
	J4-30	12 ±2 V dc	
	J4-47	28 ±5 V dc	
7	a. On HF-8032, set LOW VOLTAGE and MAIN POWER circuit breakers to OFF.		
	b. Use multimeter to measure resistance between coil L1-E1 and ground on coil module A2.	Multimeter indicates NLT 50 ohm.	Replace coil module A2.
	c. Use multimeter to measure reistance between top and bottom ring of capacitors C1 and C2 of capacitor module A3.	Multimeter indicates a short between top and bottom ring of each capacitor.	If neither indication is correct, replace module A3. If indication is correct for C2 and correct for C1, remove capacitor module A3 and check capacitor C1 lead screw assembly to see if it is disengaged from C1. If lead screw is disengaged, perform alignment procedures in paragraph 5-15.2 If lead screw is not disengaged, replace capacitor module A3.
8	On HF-8032 power supply, set all circuit breakers to OFF.		

Table 5-33. HF-8040 Coupler Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
9	Connect dummy load to antenna terminal on coupler.		
10	On HF-8032 power supply, set circuit breakers to ON in the following order: MAIN POWER LOW VOLTAGE 50/40 VDC A 50/40 VDC B 50/40 VDC C 50/40 VDC D 35 VDC.		
11	On exciter, press power switch to on and set FREQUENCY KHZ switches to 02000.0.		
12	Connect send terminal of transmission test set to A1 TX EQPT jack on audio jackfield. Adjust test set for 1000-Hz output at 0 dB mW.		
13	On exciter, set PA PWR switch to LOW and then set KEY switch to LOCK.	Coil L1 of coil module A2 and capacitors C1 and C2 drive to tune antenna coupler.	Unless visual indications occur that warrant replacement of capacitor module A3 or coil module A2, replace modules in following order: Control card A1 Discriminator card A4 Coil module A2 Capacitor module A3.
14	a. On exciter, set KEY switch to NORM. b. On exciter, set FREQUENCY KHZ switches to 04000.0.	When a tune-start signal is received, coil L1 of module A2 and capacitors C1 and C2 drive to home.	Same as step 13.

Table 5-33. HF-8040 Coupler Fault Isolation Test-Continued

Step	Procedure	Normal indication	If indication is abnormal
15	a. Set HF-8032 MAIN POWER circuit breaker to off. b. Disconnect all test equipment and reinstall cover on coupler.		

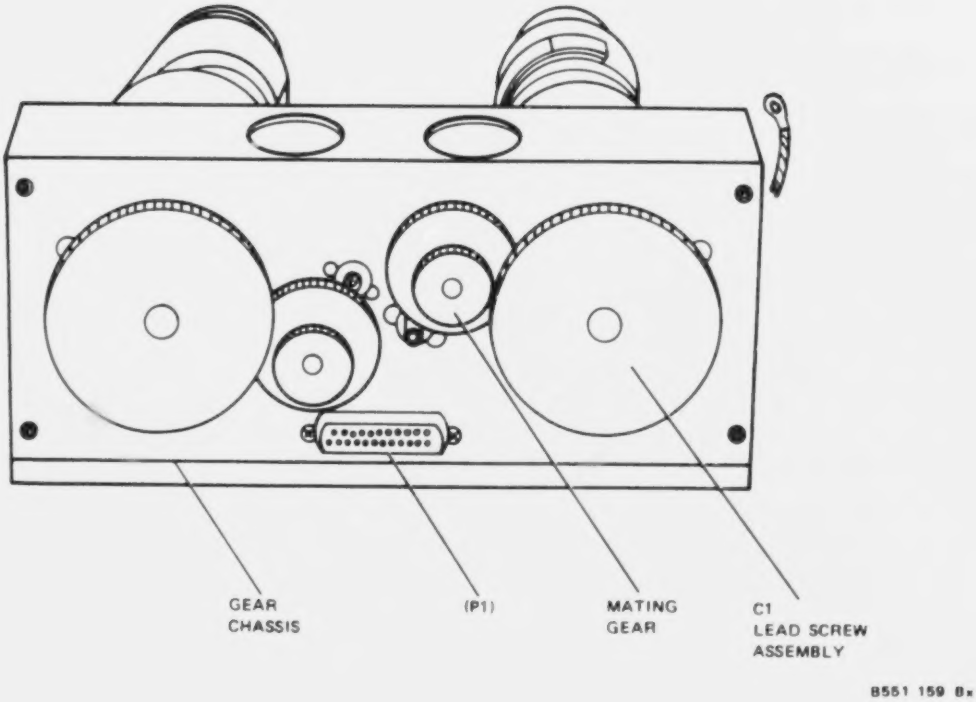

GEAR CHASSIS
(P1)
MATING GEAR
C1 LEAD SCREW ASSEMBLY
B551 159 8x

Figure 5-22. Capacitor Module Alignment Diagram

5-15.3.2. Control Module A1 removal. To remove control module, proceed as follows:

CAUTION

When removing A1 cover, use care to prevent damage to the interlock switch.

a. Loosen four captive screws (1) and remove A1 cover.

CAUTION

Use care when removing control module A1 from card guide to prevent damage to variable resistor on bottom of module.

b. Grasp module firmly on both sides and pull upward from chassis.

5-15.3.3. Coil Module A2 Removal. To remove coil module A2, proceed as follows:

a. Remove screw (13) and lockwashers (14) from ribbon connection at A3C2.

b. Remove screw (3) and nut (4) from cable clamp on rf cable assembly A8.

c. Loosen four captive mounting screws (17) on cover at bottom.

d. Carefully lift A2 from chassis.

5-15.3.4. Capacitor Module A3 Removal. To remove capacitor module A3, proceed as follows:

a. Remove screw (7), nut (8), and lockwasher (9) from capacitor C1.

b. Remove screw (10), nut (11), and lockwasher (12) from capacitor C2.

c. Remove screw (13) and lockwasher (14) from ribbon connection at C2.

d. Loosen four captive mounting screws (15).

e. Carefully lift A3 from chassis.

5-15.3.5. Discriminator Module A4 Removal. To remove discriminator module A4, proceed as follows:

a. Remove screw (7), nut (8), and lockwasher (9) from capacitor A3C1.

b. Remove coax connector A8J2 (5).

c. Remove four screws (6).

d. Carefully lift A4 from chassis.

5-15.3.6. Power supply A6 Removal. To remove power supply A6, proceed as follows:

a. Loosen four captive mounting screws (2).

b. Using handles, carefully lift power supply from chassis.

5-15.3.7. Chassis A7 Removal. To remove chassis A7, proceed as follows:

a. Perform the procedures in paragraphs 5-15.3.2 through 5-15.3.6 to remove all subassemblies.

b. Remove nut (18) from connector A8J1 (RF INPUT J2). Pull the connector inside the case until it is clear.

c. Remove nut (19) from connector A7W1P1 (J1 INPUT). Pull the connector inside the case until it is clear.

d. Loosen 16 captive mounting screws (16).

e. Carefully lift A7 from case.

5-16. CONTROL-MONITOR C-11070/TSC-60(V) (373J-1). The 373J-1 Remote Control has a built-in self-test for isolating the cause of failures. Perform the following procedures to initiate the self-test.

a. Set POWER switch on 373J-1 to ON.

b. Set CONTROL SELECT switch on 373J-1 to SELF TEST. The 373J-1 will cycle through the self-test. The OK indicator lights after self-test is complete. If the 373J-1 fails self-test, the FREQUENCY MHZ display shows one of the fault indications shown in table 5-34. Table 5-34 also gives the corrective action to take when the failure is displayed.

c. After the OK lamp lights, press each of the pushbutton switches one at a time. The switches should light as they are pressed.

d. Refer to T.O. 31S1-2TSC60-181 for more detailed maintenance procedures for the 373J-1.

5-17. HF-8023 POWER AMPLIFIER/HF-8032 POWER SUPPLY. The following paragraphs contain instructions for testing, aligning, and repairing the HF-8023/HF-8032. Testing is to a level necessary to isolate faults to a circuit card or group of cards.

WARNING

To prevent possibility of electrocution or personal injury, remove all conductive items (anything made of metal) from hands and arms before reaching into or working on electrical equipment.

CAUTION

Electrostatic discharge sensitive (ESDS) devices are in this assembly. Static electricity can damage these devices. Special handling methods and materials must be used to prevent damage. Do not touch or remove any ESDS device or any assembled circuit that has an ESDS device without properly grounding your body, test equipment, and all tools. Be thoroughly familiar with the handling procedures specified in T.O. 00-25-234. Move or store assembled circuit boards only in conductive (antistatic) bags. Do not touch the printed circuits or the connector pins on the board; handle board by the edges only.

5-17.1. Performance Tests. Table 5-35 lists the test equipment required and the procedures for performance testing the HF-8023/HF-8032. Table 5-36 shows fault indications that may appear during these tests. Perform all steps in table 5-35 in the order listed; continue through the numbered steps until a malfunction is discovered or the test is complete. If the unit fails to meet a performance standard, troubleshoot it by the fault isolation procedures in paragraph 5-17.2. Perform the performance tests periodically, as directed by the site maintenance supervisor. Between these periodic checks, perform the performance test after any repair or alignment.

Table 5-34. 373J-1 Self-Test Indications

Indication	Corrective measure
FA - 01	Replace CPU card A3.
FA - 02	Replace CPU card A3.
FA - 03	Replace output expansion card A4. If fault persists, replace CPU card A3.
FA - 04	Replace CPU card A3.
FA - 05	Disconnect control cable from control unit connector J1, and reinitiate self-test. If same fault does not occur, check monitor bus lines for short. If FA - 05 fault occurs with the control cable disconnected, replace audio control card A6. If fault persists, replace CPU card A3.
FA - 06	Replace output expansion card A4. If fault persists, replace CPU card A3.
FA - 07	Replace input expansion card A5. If fault persists, verify that all input lines to the card are high (open or not grounded). If all lines are high, replace CPU card A3.

NOTE

The isolation procedures above relate self-test indications to the card most likely to fail. Fault isolation and maintenance actions also include inspection of control unit for loose or broken wiring, bent connector pins, etc.

5-17.2. Fault Isolation Tests. Fault indicators on the HF-8023 light to indicate failures in components of the power supply. Table 5-36 lists the component failures associated with each indicator. If the fault can not be isolated with the fault indicators, perform the fault isolation procedures in table 5-37. In some cases, more than one action item for clearing an abnormal indication is listed in table 5-37. When this happens, replace the first item listed and reapply power to see if the fault is cleared. If not, replace the next item and check to see if fault is cleared. Repeat this action until all listed items have been replaced.

5-17.3. Alignment and Adjustment Procedures. Alignment/adjustment of the HF-8023 power amplifier and HF-8032 power supply is limited to the following calibration procedures. For pa tune-power, TGC, and ALC adjustment procedures, refer to paragraphs 5-6.1 and 5-6.2.

5-17.3.1. HF-8032 Power Supply Voltmeter Calibration.

a. Set power supply MAIN POWER circuit breaker to OFF.

b. Slide power supply out of rack and remove its top panel.

c. Disconnect cable from connectors J2 and J3 on rear panel of power supply.

Table 5-35. HF-80 1-kW Power Amplifier/Power Supply Performance Test

Test equipment required:

RF Attenuator, Bird 8329-300 or equivalent.

Preliminary Instructions:

a. At signal entry panel A3, patch pin C (rf interlock) of ANT COUPLER connector J1 to pin T (ground).

b. At radio patch panel A1A2A4, connect cables as follows:

Cable	Connector
Pa control W236	LOCAL PA J5
Transmit rf W102	LOCAL PA/RF J1
Receive rf W103	PA T/R RELAY J2

c. On power distribution panel A2A1, set the following circuit breakers to on:

MAIN POWER

POWER AMPLIFIER

EXCTR/PRESEL.

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
1	At signal entry panel A3, connect rf attenuator to TRANSMIT ANTENNA connector J7.		Set exciter A1A2A2 controls as follows: PWR to off (switch out) CONT to LCL MODE to CW KEY to NORM PA PWR to OFF METER to XMT OUT PHONES to CH A1 AF FREQUENCY KHZ to 02000.0.	
2			Set power supply A1A4A2 controls as follows: MAIN POWER circuit breaker to OFF. Remaining circuit breakers to ON	

Table 5-35. HF-80 1-kW Power Amplifier/Power Supply Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
			VOLTMETER switch to INPUT LINE VAC.	
3			Set power amplifier (pa) A1A4A3 controls as follows. MULTIMETER switch to FWD PWR PA KEY switch to OFF LOCAL/REMOTE switch to LOCAL MANUAL/AUTO switch to MANUAL PA POWER switch to OFF.	
4			On preselectors A1A3A7 and A1A3A9, set the PWR switch to on (in).	
5			Set power supply MAIN POWER circuit breaker to ON.	On power supply, VOLTMETER reads ac power source voltage. On pa, RF INTLK indicator lights, TUNE STEP indicator reads 1, and BAND indicator reads 0.
6			On power supply, set VOLTMETER switch as follows and observe VOLTMETER:	On power supply, VOLTMETER reads:
			+50/40 VDC (D) through (A)	0 ±1.0 V dc
			+35 VDC	0 ±1.0 V dc
			+28 VDC	0 ±1.0 V dc
			+15 VDC	+15 ±0.5 V dc
			-12 VDC	-12 ±0.5 V dc
			+12 VDC	+12 ±0.5 V dc
			+5 VDC	+5 ±0.5 V dc

Table 5-35. HF-80 1-kW Power Amplifier/Power Supply Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
7			On exciter, set PWR switch to on (in). Clear EXCITER FAULT light by changing one of the FREQUENCY KHZ digits (Return setting to 02000.0.)	
8			On pa, set PA POWER switch to LOW, then press TUNE START switch.	MULTIMETER dial light comes on; PWR SPLY indicator lights; TUNE STEP indicator reads 1.
9			On power supply set VOLTMETER switch as follows and observe VOLTMETER:	VOLTMETER reads:
			+5 VDC	+5 ±0.5 V dc
			+12 VDC	+12 ±0.2 V dc
			-12 VDC	-12 ±0.2 V dc
			+15 VDC	+15 ±0.5 V dc
			+28 VDC	+28 ±0.8 V dc
			+35 VDC	+35 ±1.0 V dc
			+50/40 VDC (A)-(D)	+46 ±1.0 V dc
10			On exciter, set KEY switch to LOCK.	On pa, RF INPUT indicator lights.
11			Set pa PA KEY to ON (up).	On pa, KEY indicator lights.
12			On pa, press TUNE STEP ADVANCE switch once.	On pa, TUNE STEP indicator reads 2; BAND indicator reads 1.
13			On pa, press TUNE STEP ADVANCE switch once.	On pa, TUNE STEP reads 3; MULTIMETER reads 200 ±20 W.
14			On pa, press TUNE STEP ADVANCE switch twice.	TUNE STEP reads 5.

Table 5-35. HF-80 1-kW Power Amplifier/Power Supply Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
15			Set MULTIMETER switch as follows:	MULTIMETER reads about:
			VSWR	1 ±0.5
			REFLD PWR	0 ±5.0 W
			FWD PWR	480 ±20 W
			TOTAL PA	30 ±5 A
			PA MOD D	8 ±2 A
			PA MOD C	8 ±2 A
			PA MOD B	8 ±2 A
			PA MOD A	8 ±2 A
			DRIVER	1.6 ±0.3 A
			DRIVER RF	13.5 ±6 V
			PRE-DRVR RF	0.75 ±1 V
			INPUT RF.	1.4 ±0.6 V
16			On pa, set PA KEY switch to OFF; set PA POWER switch to HIGH.	
17			On pa, set PA KEY switch to ON (up); set MULTIMETER switch to FWD PWR.	On pa, MULTIMETER reads about 980 W.
18			On pa, set PA KEY switch to OFF; press TUNE START switch.	On pa, MULTIMETER reads 0 W; TUNE STEP indicator reads 1; KEY indicator goes off.
19			On exciter set KEY switch to NORM.	On pa, RF INPUT indicator goes off.
20			On pa, set controls as follows: PA POWER switch to OFF	On pa, MULTIMETER dial light goes off; PWR SPLY indicator goes off; RF INTLK indicator remains lighted; TUNE

Table 5-35. HF-80 1-kW Power Amplifier/Power Supply Performance Test-Continued

Step	Connection of test equipment	Point of test	Control settings and operation of equipment	Performance standard
			MANUAL/AUTO switch to AUTO	STEP and BAND indications do not change.
			LOCAL/REMOTE switch to REMOTE	
21			On exciter, set PA PWR switch to LOW.	On pa, MULTIMETER dial light comes on; PWR SPLY indicator lights; TUNE STEP and BAND indicators read 1.
22			On exciter, set FREQUENCY KHZ switches to 04000.0; set KEY switch to LOCK.	On pa, RF INPUT and KEY indicators light; BAND indicator reads 3. Within 10 seconds, TUNE STEP indicator advances to 5 and MULTIMETER READS 500 ±50 W.
23			On exciter, set KEY switch to NORM: set PA PWR switch to HIGH PWR.	
24			On exciter, set KEY switch to LOCK.	On pa, MULTIMETER reads 1000 ±100 W.
25			On exciter, set KEY switch to NORM and PA PWR switch to OFF.	
26			Turn off equipment and disconnect rf attenuator.	

Table 5-36. HF-8023/HF-8032 Fault Indications

Fault indication	Remedy
MOD A	Replace pa output module A3.
MOD B	Replace pa output module A4.
MOD C	Replace pa output module A5.
MOD D	Replace pa output module A6.

Table 5-36. HF-8023/HF-8032 Fault Indications-Continued

Fault indication	Remedy
INTLK	Verify that all cards are firmly seated in their connectors and that antenna coupler is connected to shelter.
TEMP	Check blowers for proper operation and air flow.
VSWR	Check antenna coupler.
TUNE	1. Initiate a tune start signal to see if fault clears. 2. Check to see if antenna coupler is tuning properly.

Table 5-37. Power Amplifier/Power Supply Fault Isolation Tests

Test equipment required:

RF Attenuator, 2 kW, Bird 8329-300

Preliminary instructions:

a. Connect jumper between pins C and T on ANT COUPLER jack J1 on signal entry panel.

b. Connect dummy load to TRANSMIT ANTENNA jack on signal entry panel.

c. On HF-8023 power amplifier set, controls as follows:

PA KEY to OFF
PA PWR to OFF
MANUAL/AUTO to MANUAL
LOCAL/REMOTE to LOCAL

d. On power distribution panel A2A1, set the following circuit breakers to on:

MAIN POWER
POWER AMPLIFIER
EXCTR/PRESEL.

Step	Procedure	Normal indication	If indication is abnormal
1	On HF-8032 power supply, set MAIN POWER and LOW VOLTAGE circuit breakers to ON.	Power supply blower comes on.	1. Check blower. 2. Replace converter module on rear of power supply.

Table 5-37. Power Amplifier/Power Supply Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
2	On HF-8032, set voltmeter select switch to the following positions and observe VOLTMETER reading:		
	+5 VDC	4.8 to 5.4	Replace low-voltage module A5 in HF-8032 power supply.
	+12 VDC	11.8 to 12.2	
	-12 VDC	11.8 to 12.2	
	+15 VDC	13.8 to 16.2	
3	Observe RF INTLK indicator on pa.	RF INTLK indicator is on.	Remove cover from pa and ensure that all cards and modules are firmly seated in mating connectors.
4	Observe the TUNE STEP indicator on the pa front panel.	TUNE STEP indicator shows step 1. If indication is normal, proceed to step 6.	Proceed to step 5.
5	Press TUNE START switch on pa.	TUNE STEP indicator shows step 1.	1. Replace exciter interface card A11. 2. Replace digital control card A9. 3. Replace analog control card A10. 4. Replace front panel card A1A4.
6	Observe BAND indicator on the pa front panel.	BAND indicator shows 0.	1. Replace digital control card A9. 2. Replace front panel card A1A4.
7	a. On HF-8032 power supply, set remaining circuit breakers to ON. b. On exciter, set controls as follows: KEY to NORM PA PWR to STBY CONT to LCL		

Table 5-37. Power Amplifier/Power Supply Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
7 (Cont)	PILOT CARR to OFF MODE to CW FREQUENCY KHZ to 04000.0		
	c. On HF-8023, set PA PWR switch to LOW.	PWR SPLY indicator on HF-8032 lights.	1. Replace analog control card A10 2. Replace digital control card A9. 3. Replace front panel card A1A4.
8	Press TUNE STEP ADVANCE switch four times while observing TUNE STEP indicator.	TUNE STEP indicator shows 2 through 5 as switch is pressed.	1. Replace digital control card A9. 2. Replace front panel card A1A4.
9	On HF-8032 power supply set, voltmeter select switch to +35 VDC and observe VOLTMETER indication.	35 ±1.0 volt	Replace 500-watt converter module in power supply.
10	On HF-8032 power supply set, voltmeter select switch to the following positions and observe VOLTMETER indications:		1. Replace 100-watt converter module A2 in power supply.
	+50/40 VDC A	50 ±1.0 volts	2. Replace analog control card A10 in power amplifier
	+50/40 VDC B	50 ±1.0 volts	
11	Set HF-8032 voltmeter select switch to the following positions and observe VOLTMETER indications:		1. Replace 1000-watt converter module A3 in power supply.
	+50/40 VDC C	50 ±1.0	2. Replace analog control card A10 in pa.
	+50/40 VDC D	50 ±1.0	
12	a. Press TUNE START switch on pa.		1. Replace analog control card A10.
	b. On exciter, set FREQUENCY KHZ switches to 14000.0. Then set exciter KEY switch to LOCK.	RF INPUT indicator on pa lights.	2. Replace digital control card A9. 3. Replace front panel card A1A4.

Table 5-37. Power Amplifier/Power Supply Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
13	a. Set pa MANUAL/AUTO switch to AUTO.		
	b. On pa, set KEY switch to ON.	KEY indicator on pa lights.	1. Replace exciter interface card A11 2. Replace front-panel card A1A4.
14	a. Set pa multimeter select switch to RF INPUT. Note reading on multimeter for reference.		
	b. Set pa multimeter select switch to PRE-DRVR RF.	MULTIMETER reading increases from level in step 14a. Note reading for reference in next step.	Replace pre-driver card A2A1 in driver module A2.
15	Set pa multimeter select switch to DRIVER RF.	MULTIMETER reading increases from level in step 14b.	Replace driver output card A2A2 in driver module A2
16	Set pa multimeter select switch to DRIVER.	MULTIMETER shows 2.5 ±0.3 A.	Replace driver module A2.
17	Set pa multimeter select switch to PA MOD A.	MULTIMETER shows 8 ±2 A.	Replace pa output module A3.
18	Set pa multimeter select switch to PA MOD B.	MULTIMETER shows 8 ±2 A.	Replace pa output module A4.
19	Set pa multimeter select switch to PA MOD C.	MULTIMETER shows 8 ±2 A.	Replace pa output module A5.
20	Set pa multimeter select switch to PA MOD D.	MULTIMETER shows 8 ±2 A.	Replace pa output module A6.
21	Set pa multimeter select switch to TOTAL PA.	MULTIMETER shows 30 ±4 A.	Replace analog control card A10.
22	Set pa multimeter select switch to FWD PWR	MULTIMETER shows 480 ±20 W.	1. Adjust ALC and TGC per paragraph 5-6.1. 2. Replace exciter interface card A11. 3. Calibrate directional coupler calibration procedures per paragraph 5-17.3.3. 4. Replace directional coupler A1A1.

Table 5-37. Power Amplifier/Power Supply Fault Isolation Tests-Continued

Step	Procedure	Normal indication	If indication is abnormal
23	a. On pa, set PA KEY switch to OFF. Then set PA POWER switch to HIGH.		
	b. On pa, set PA KEY switch to ON.		
	c. Set multimeter select switch to FWD PWR.	MULTIMETER shows 980 ± 20 W.	1. Adjust ALC and TGC per paragraph 5-6.2. 2. Replace exciter interface card A11. 3. Calibrate directional coupler calibration procedures per paragraph 5-17.3.3. 4. Replace directional coupler A1A1.
24	a. On pa, set PA KEY switch to OFF.		
	b. On exciter, set KEY switch to NORM.		
	c. Set pa LOCAL/REMOTE switch to REMOTE.		
	d. On exciter, set PA PWR switch to HIGH PWR.		
	e. Set pa multimeter select switch to FWD PWR.		
25	Set exciter KEY switch to LOCK.	Pa MULTIMETER shows 980 ± 20 watts.	Replace exciter interface card A11.
26	Set exciter KEY switch to NORM.		

NOTE

A diagram on the inside of the power supply top panel gives circuit card locations.

d. Loosen four captive screws that hold 500-W converter module A4; lift and remove module from power supply.

e. Remove three screws, three lockwashers, and three flatwashers that secure crowbar/logic card A7.

f. Hold crowbar/logic card, and carefully disconnect connector P1.

g. Temporarily reinstall crowbar/logic card; leave P1 disconnected.

h. Set power supply MAIN POWER circuit breaker to ON.

i. Set VOLTMETER switch to + 12 V.

j. Using a dvm, measure the dc voltage between + 12 V OUTPUT test point TP4 and GND OUTPUT test point TP1 on top of low-voltage regulator module A5.

NOTE

A6R1 is at the top right edge of dvm card A6.

k. Adjust potentiometer A6R1 until VOLTMETER indicator reading and the dvm reading are exactly the same.

l. Set power supply MAIN POWER circuit breaker to OFF.

m. Remove screws that secure crowbar/logic card.

n. Hold crowbar/logic card, and carefully reconnect connector P1 to card.

o. Reinstall crowbar/logic card, using three flatwashers, three lockwashers, and three screws.

p. Reinstall 500-W converter module A4 in power supply and secure with captive screws.

q. Reconnect cables to connectors J2 and J3 on rear panel of power supply.

r. Reinstall top panel on power supply; slide power supply into rack and secure.

s. Set power supply MAIN POWER circuit breaker to ON.

5-17.3.2. HF-8023 Power Amplifier Multimeter Calibration.

a. On power supply A1A4A2, set MAIN POWER circuit breaker to OFF.

b. Slide pa from rack and remove top panel.

CAUTION

To prevent rf circuit damage from overheating, do not apply power to pa while blower/combiner compartment cover is removed.

c. Remove compartment cover for access to front-panel meter and MULTIMETER switch terminals.

d. Set MULTIMETER switch to the first position ccw from INPUT RF.

NOTE

The 5V CAL and 1.5V CAL potentiometers are on the top front of the pa chassis, to the left of the MULTIMETER.

e. If present, remove tape that covers access holes to 5V CAL potentiometer (A1A4R23) and 1.5V CAL potentiometer (A1A4R25).

NOTE

MULTIMETER switch S1 is a 2-section wafer switch. Section S1A is the switch section closest to the front panel; section S1B is the section farthest from the front panel.

f. Using an external dc power source, connect +5 ±0.01 V dc (positive lead) to the switch wiper (common terminal) of S1A; connect the 5-V return (negative lead) to the negative terminal (left lug) of MULTIMETER meter M1.

g. Adjust 5V CAL potentiometer for an exact full-scale reading on MULTIMETER.

h. Set the external power source for +1.5 ±0.01 V dc.

i. Disconnect the power source positive lead from S1A and connect it to the switch wiper of S1B.

j. Adjust 1.5V CAL potentiometer for an exact full-scale reading on MULTIMETER.

k. Disconnect power source from pa.

l. Reinstall compartment cover, then top panel, on pa.

m. Slide pa into rack and secure.

n. On power supply, set MAIN POWER circuit breaker to ON.

5-17.3.3. HF-8023 Power Amplifier Directional Coupler A1A1 Adjustment.

a. Connect 1-kW rf attenuator through in-line wattmeter to TRANSMIT ANTENNA connector J7 on signal entry panel A3.

b. At signal entry level, jumper pin C of ANT COUPLER connector J1 to ground (pin M).

c. At radio patch panel A1A2A4, disconnect cable W102 from LOCAL PA/RF INPUT connector J1.

d. Connect rf signal generator to LOCAL PA/RF INPUT connector on radio patch panel.

e. On pa front panel, set controls as follows:

PA KEY switch to OFF

PA POWER switch to OFF

MANUAL/AUTO switch to MANUAL

LOCAL/REMOTE switch to LOCAL

MULTIMETER switch to FWD PWR.

f. Set rf signal generator to 14 MHz at 1 V rms.

g. On power supply, set all circuit breakers to ON.

h. On pa, press TUNE START switch.

i. Set PA POWER switch to HIGH.

j. Set PA KEY switch to ON (up).

k. Using TUNE STEP ADVANCE switch, manually advance the pa to tune step 5.

l. Adjust the output level of the rf signal generator until the in-line wattmeter reads 1000 W.

m. Note forward power reading on pa MULTIMETER. If MULTIMETER reads within 50 W of in-line wattmeter reading, proceed to step y.

n. On pa, set PA KEY switch to OFF.

o. Set PA POWER switch to OFF.

p. On power supply, set MAIN POWER circuit breaker to OFF.

q. Slide pa out of rack; disconnect all cables from pa rear-panel connectors.

r. Remove pa from rack slides; place pa on its left side on the shelter floor.

s. Remove smaller (forward) panel from bottom of pa.

NOTE

Low-pass filter assembly A8 is attached to the larger (rear) bottom panel on the pa with hex-head screws. Do not remove these screws when removing bottom panel.

t. Remove Phillips-head screws that hold larger (rear) panel to bottom of pa; carefully lower panel to shelter floor. Remove panel that covers directional coupler A1A1.

NOTE

Directional coupler A1A1 has two potentiometers; A1A1R3 is the potentiometer farthest from the rear of the pa. One-half turn of A1A1R3 changes the forward power reading on the MULTIMETER by about 50 W.

u. Adjust A1A1R3 to correct the MULTIMETER reading error in step m. (Turning A1A1R3 cw increases the MULTIMETER reading; turning it ccw decreases the reading.)

v. Reinstall bottom panels on pa.

w. Reinstall pa on rack slides; reconnect all cables on pa rear panel.

x. Repeat steps e. through w. until pa MULTIMETER reads within 50 W of actual rf output as shown on in-line wattmeter.

y. Adjust the output level of the rf signal generator until the in-line wattmeter reads 100 W.

z. On pa, set controls as follows:

PA KEY switch to OFF

PA POWER switch to OFF

MANUAL/AUTO switch to MANUAL

LOCAL/REMOTE switch to LOCAL

MULTIMETER switch to REFLD PWR.

aa. Slide pa out of rack; remove top panel.

ab. On analog control card A10, jumper TP1 (brown) to TP8 (gray).

ac. On pa rear panel, disconnect cable from ANT RF connector J8 and cable from RF RETURN connector J7.

ad. Connect cable W108 to RF RETURN connector J7 and jumper cable to ANT RF connector J8.

ae. On pa front panel, set PA POWER switch to LOW.

af. Press TUNE START switch.

ag. Set PA KEY switch to ON (up).

ah. Using TUNE STEP ADVANCE switch, manually advance the pa to tune step 5.

ai. Note reflected power reading on pa MULTIMETER. If MULTIMETER reads within 50 W of in-line wattmeter reading, proceed to step av. If it does not, go to step aj.

aj. On pa, set PA KEY switch to OFF.

ak. Set PA POWER switch to OFF.

al. On power supply, set MAIN POWER circuit breaker to OFF.

am. Disconnect all cables from pa rear-panel connectors.

an. Remove pa from rack slides; place pa on its left side on the shelter floor.

ao. Remove smaller (forward) panel from bottom of pa.

ap. Remove Phillips-head screws that held larger (rear) panel to bottom of pa; carefully lower panel to shelter floor. Remove panel that covers directional coupler A1A1.

NOTE

Directional coupler A1A1 has two potentiometers; A1A1R4 is the one closest to the rear of the pa. One-half turn of A1A1R4 changes the reflected power reading on the MULTIMETER by about 10 W.

aq. Adjust A1A1R4 an amount proportional to the MULTIMETER reading error in step ai. (Turning A1A1R4 cw increases the MULTIMETER reading; turning A1A1R4 ccw decreases the MULTIMETER reading.)

ar. Reinstall panel on directional coupler A1A1; reinstall bottom panels on pa.

as. Reinstall pa on rack slides.

at. Connect cables to pa as follows:

CABLE	PA CONNECTOR
W108	RF RETURN (J7)
W239	PWR SPLY CONT (J4)
W240	POWER (J5)
W241	CPLR CONT (J3)
Jumper	RF OUTPUT (J6)
Jumper	ANT RF (J8)

au. Repeat steps z. through at. until pa MULTIMETER reads within 50 W of in-line wattmeter reading.

av. On pa, set controls as follows:

PA KEY switch to OFF

PA POWER switch to OFF

MANUAL/AUTO switch to AUTO

LOCAL/REMOTE switch to REMOTE.

aw. On pa rear panel, reconnect cables as follows:

CABLE	PA CONNECTOR
W104	RF INPUT (J1)
W105	RCVR RF (J9)
W108	ANT RF (J8)
W237	EXCTR CONT (J2)
W239	PWR SPLY CONT (J4)
W240	POWER (J5)
W241	CPLR CONT (J3)
Jumper	RF OUTPUT (J6)
Jumper	RF RETURN (J7)

ax. Remove jumper on analog control card.

ay. Install top panel on pa; slide pa into rack.

az. At radio patch panel A1A2A4, disconnect rf signal generator; reconnect cable W102 to LOCAL PA/RF INPUT connector J1.

ba. At signal entry panel, disconnect jumper from ANT COUPLER connector J1.

bb. Disconnect rf attenuator cable from signal entry panel TRANSMIT ANTENNA connector.

5-18. REMOVAL AND REPLACEMENT OF HF-8023 SUBASSEMBLIES AND CHASSIS-MOUNTED COMPONENTS. The following paragraphs contain instructions for removing and replacing assemblies where the procedures are not obvious.

WARNING

Lethal voltages remain in the pa when POWER switch is turned off and primary power still connected. Do not attempt disassembly or assembly of the unit with primary power applied.

CAUTION

Electrostatic discharge sensitive (ESDS) devices are used in this assembly. Static electricity can damage these devices. Special handling methods and materials must be used to prevent damage. Do not touch or remove any ESDS device or any assembled circuit that has a ESDS device without properly grounding your body, test equipment, and all tools. Be thoroughly familiar with the handling procedures specified in T.O. 00-25-234. Move or store assembled circuit boards only in conductive (antistatic) bags. Do not touch the printed circuits or the connector pins on the board; handle the board by the edges only. Keep the pins of an ESDS device shorted together whenever possible; use a device-shorting bus, a shorting tube, or conductive foam.

5-18.1. Removal of Cards and Modules.

a. Remove top cover by removing 16 screws that secure it in place.

b. After removing top cover, remove circuit cards A9, A10, and A11 from cardcage A1A2 by pulling each circuit card straight up from its mounted position.

c. With top cover removed, remove modules A2, A3, A4, A5, A6 and A13; loosen and slide the clip retainers on each module and pull the module straight up.

5-18.2. Low-Pass Filter Assembly A8 Removal.

a. Remove bottom plate from the bottom front of the pa by removing the 10 screws that secure it in place.

b. Disconnect W1P16 frrom A8J1 (protrudes into front compartment of the pa).

c. Disconnect Type N adapter from A8J2 (J6, RF OUTPUT) at the rear of the pa.

d. Remove low-pass filter assembly A8 by removing the 18 screws that secure it in place. Pull A8 straight away from the chassis.

5-18.3. Power Combiner A7 Removal.

NOTE

Removing the top cover and the bottom plate of power combiner A7 makes access and removal of A7 easier.

a. Remove top cover by removing 16 screws that secure it in place. Remove cover from blower compartment.

b. Remove bottom plate from the front portion of the bottom of the pa by removing the 10 screws that secure it in place.

c. Disconnect W1P15 from A7J5.

NOTE

Be sure that BNC connectors are clearly identified before removing them. Wrong BNC connectors here will not harm operation but may give slightly different indications from previous indications.

d. Disconnect the following BNC connectors (all pendant cables from A1A3):

A1A3P11 from A7J1

A1A3P12 from A7J2

A1A3P13 from A7J3

A1A3P14 from A7J4.

e. Remove the screws that hold the power combiner in place and lift it from the chassis.

5-18.4. Directional Coupler A1A1 Removal.

NOTE

Identify all wires unsoldered in this procedure for use in reassembly.

a. Mark and disconnect wires (only A1A1 end has to be disconnected) between:

A1A1P1 and A1J10

A1A1E6 and A1E10

A1A1E7 and A1E11.

b. Remove the 4 screws and lockwashers that hold the directional coupler in place. Lift directional coupler A1A1 from chassis.

5-18.5. Cardcage Backplane A1A2 Removal.

a. Disconnect the following connectors:

A1W1P8 from A1A2J7

A1W2P2 from A1A2J8

A1W2P9 from A1A2J6

A4P6 from A1J2J5.

b. Remove the 8 screws and lockwashers that hold the cardcage backplane in place. Lift cardcage backplane A1A2 from chassis.

5-18.6. Rf Backplane Assembly A1A3 Removal.

a. Disconnect the following connectors:

A1W2P1 from A1A3J11

A1A3P11 from A7J1

A1A3P12 from A7J2

A1A3P13 from A7J3

A1A3P14 from A7J4.

b. Remove the 4 screws, lockwashers, and nuts that hold A1A3W3J5 to the rear panel. Loosen A1A3W3J5 from the rear panel.

c. Remove the 12 screws and lockwashers that hold the rf backplane in place. Lift rf backplane A1A3 from chassis.

5-18.7. Front-Panel Card A1A4 Removal.

a. Disconnect the following connectors:

A1P7 from A1A4J1

A1A4P6 from A1A2J5.

b. Remove the 5 screws, flat washers, and lockwashers that hold the front-panel card to the 5 standoffs. Lift front panel card A1A4 from the chassis.

5-18.8. Assembly Procedures. The following paragraphs contain instructions for replacing assemblies in the HF-8023. Except for the subassemblies that are mounted as part of the chassis, the unit can be reassembled in any order. The plug-in circuit cards are keyed so that each card will only plug into its mating connector.

5-18.8.1. Assembly of Chassis-Mounted Subassemblies. The following paragraph contains procedures for reassembling chassis-mounted components on chassis A1.

5-18.8.1.1 Installation of Front-Panel Card A1A4.

a. Position front-panel card A1A4 to the 5 standoffs. Secure it in place using the 5 screws, flat washers, and lockwashers removed in disassembly.

b. Reconnect A1P7 to A1A2J5, if A1A2 is installed.

5-18.8.1.2. Installation of RF Backplane Assembly A1A3.

a. Put rf backplane assembly A1A3 in place and secure it with the 12 screws and lockwashers removed in disassembly.

b. Place A1A3W3J5 in place in the rear panel and secure it with the 4 screws, lockwashers, and nuts removed in disassembly.

c. Reconnect the following connectors:

A1W2P1 to A1A3J11

A1A3P11 to A7J1

A1A3P12 to A7J2

A1A3P13 to A7A3

A1A3P14 to A7J4.

5-18.8.1.3. Installation of Cardcage Backplane A1A2.

a. Put cardcage backplane A1A2 in place and secure it with the 8 screws and lockwashers removed in disassembly.

b. Reconnect the following connectors:

A1W1P3 to A1A2J7

A1W2P2 to A1A2J8

A1W2P9 to A1J2J6

A4P6 to A1J2J5.

5-18.8.1.4. Installation of Directional Coupler A1A1.

a. Put directional coupler A1A1 in place and secure it with the 4 screws and lockwashers removed in disassembly.

b. Reconnect and solder the following wires (marked per disassembly paragraph 5-18.4) between:

A1A1P1 and A1J10

A1A1E6 and A1E10

A1A1E7 and A1E11.

5-18.9. Installation of Power Combiner A7.

a. Put power combiner A7 in place and secure it with the 4 screws removed in disassembly.

b. Reconnect the following connectors:

A1A3P11 to A7J1

A1A3P12 to A7J2

A1A3P13 to A7J3

A1A3P14 to A7J4.

c. Reconnect W1P15 to A7J5.

d. Replace blower compartment cover.

5-18.10. Installation of Low-Pass Filter Assembly A8.

a. Put low-pass filter assembly A8 in place, using card to ensure that A8J3 and A1W2P3 are properly mated.

b. Secure low-pass filter assembly A8 in place with the 18 screws removed in disassembly.

c. Reconnect W1P16 to A8J1 (protruding into front compartment of the pa).

d. If used, reconnect the type N adapter at A8J2 (J6, RF OUTPUT) at the rear of the pa.

5-18.11. Installation of Cards and Modules.

CAUTION

When installing cards, be sure that each card is installed in the card guides of the correct slot. Failure to do so could damage the key placed in the mating connector or damage the keyway on the circuit card.

a. Install card in card-cage backplane A1A2 by inserting card into card guides and sliding down into position. When in position, press firmly on card handles to be sure card touches connector for a good electrical connection.

NOTE

If card does not bottom out with firm pressure applied, remove card. Verify that proper card is being installed and that keyway on circuit card and key in mating connector are not damaged. Reinstall card if this is okay.

b. Install modules in rf backplane assembly by placing module in position and pressing it firmly to ensure good contact. Use the clip retainers to secure modules in place.

5-18.12. Installation of Top Cover. Put top cover on unit and secure it in place with the 16 screws removed in disassembly.

5-18.13. Installation of Bottom Plate. Put bottom plate on unit and secure it in place with the 10 screws removed in disassembly.

5-19. REMOVAL AND REPLACEMENT OF HF-8032 POWER SUPPLY SUBASSEMBLIES.

WARNING

Lethal voltages are present in power supply when circuit breakers are off and primary power is still connected. Do not attempt disassembly or assembly of the unit with primary power applied.

CAUTION

Electrostatic discharge sensitive (ESDS) devices are used in this assembly. Static electricity can damage these devices. Special handling methods and materials must be used to prevent damage. Do not touch or remove any ESDS device or any assembled circuit that has an ESDS device without properly grounding your body, test equipment, and all tools. Be thoroughly familiar with the handling procedures specified in T.O. 00-25-234. Move or store assembled circuit boards only in conductive (antistatic) bags. Do not touch the printed circuits or the connector pins on the board; handle the board by the edges only. Keep the pins of an ESDS device shorted together whenever possible; use a device-shorting bus, a shorting tube, or conductive foam.

5-19.1. Removal. The following paragraphs contain procedures for removing subassemblies from the HF-8032 where the procedures are not obvious. Disconnect power plug before performing any of these procedures.

NOTE

Retain hardware removed during disassembly for use in reassembly. Refer to parts list in T.O. (TBA) as an aid in disassembly and assembly.

5-19.1.1. Removal of Plug-In Modules.

a. Remove top cover by removing 14 screws that secure it in place.

b. After removing top cover, remove plug-in modules (A2, A3, A4, and A5) from chassis A1 by loosening 4 captive screws (one at each corner of module) and pulling the module straight up.

5-19.1.2. Removal of Crowbar/Logic Card A7.

a. Remove 500-watt converter module A4.

b. Remove 3 screws, lockwashers, and flat washers that secure crowbar/logic card A7 in place. Lift A7 from its mounted position.

c. Disconnect P1 from A7 J1.

5-19.1.3. Removal of Digital Voltmeter Card A6.

a. Remove 500-watt converter module A4.

b. Disconnect P2 from A6J1.

c. Remove 4 screws, lockwasher, flat washers, and hex screw-posts that secure Digital Voltmeter Card A6 in place. Lift A6 from its mounted position.

5-19.1.4. Disassembly of Plug-In Modules. The following paragraphs contain disassembly procedures for the plug-in modules in the HF-8032.

5-19.1.4.1. Disassembly of 1000 Watt Converter Module A2/A3.

a. Remove module cover by removing the 2 screws that secure it in place.

b. Remove circuit card A2A1/A3A1 as follows:

(1) Disconnect A2P3/A3P3 from A2A1J1/A3A1J1.

(2) Disconnect A2A2P1/A3A2P1 from A2A1J2/A3A1J2.

(3) Remove the 1 screw, hex screw-post, stud, flat washer, cable clamp, lockwasher, and flat washer.

(4) Remove 5 screws, lockwashers, and flat washers that hold A2A1/A3A1 in place.

(5) Lift A2A1/A3A1 from its mounted position.

c. Remove circuit card A2A2/A3A2 as follows:

(1) Remove A2A1/A3A1 circuit card per step b.

(2) Disconnect A2P4/A3P4 from A2A2J1/A3A2J1.

(3) Remove 6 hex screw posts that hold A2A2/A3A2 in place.

(4) Lift A2A2/A3A2 from its mounted position.

NOTE

If further disassembly of this module is required, mark and disconnect wires as necessary for use in reassembly.

5-19.1.4.2. Disassembly of 500-Watt Converter Module A4.

a. Remove module cover by removing the 2 screws that hold it in place.

b. Remove circuit card A4A1 as follows:

(1) Disconnect A4P3 from A4A1J1.

(2) Disconnect A4A2P1 from A4A1J2.

(3) Remove the screw, hex screw-post, stud, flat washer, cable clamp, lockwasher, and flat washer.

(4) Remove the 5 screws, lockwashers, and flat washers that secure A4A1 in place.

(5) Lift A4A1 from its mounted position.

c. Remove circuit card A4A2 as follows:

(1) Remove A4A2 circuit card per step b.

(2) Disconnect A4P4 from A4A2J1.

(3) Remove 6 hex screw posts that secure A4A2 in place.

(4) Lift A4A2 from its mounted position.

NOTE

If further disassembly of this module is required, mark and disconnect wires as necessary for use in reassembly.

5-19.1.4.3. Disassembly of Low-Voltage Module A5. Remove circuit card A5A1 as follows:

a. Disconnect A5P2 from A5A1J1.

b. Remove 4 screws, lockwashers, and flat washers that hold A5A1 in place.

c. Slide A5A1 from its mounted position.

5-19.2. Replacement. Subassemblies A6 and A7, on the back of the front panel, must be installed when 500-W converter module A7 is removed; otherwise, assembly of the unit is in no special order. Each of the connectors will accept any of the converter modules. However, the 500-W modules will not work in the 1000-W connector location, and the 1000-W module will not work in the 500-W location. Power enters the modules through different pins so that the modules cannot operate in the wrong locations. Refer to the related publication in table 1-5 for correct location of subassemblies and modules.

5-19.2.1. Assembly of Plug-In Modules.

NOTE

These assembly procedures assume that the assembly has been repaired or is being replaced and that all hardware and components are in place.

5-19.2.2. Assembly of Low-Voltage Module A5. Assemble low-voltage module A5 as follows:

a. Slide A5A1 into its mounted position.

b. Secure A5A1 in place using 4 screws, lockwashers, and flat washers.

c. Connect A5P2 to A5A1J1.

5-19.2.3. Assembly of 500-Watt Converter Module A4.

a. To install A4A2 circuit card:

  (1) Place A4A2 in its mounted position.

  (2) Secure A4A2 in place with 6 hex screw posts.

  (3) Connect A4P4 to A4A2J1.

b. To install A4A1 circuit card:

  (1) Place A4A1 in its mounted position.

  (2) Secure A4A1 in place with 5 screws, lockwashers, and flat washers.

  (3) Attach additional stud, hex screw post, lockwasher, and flat washer and attaching cable clamp with a screw and flat washer.

  (4) Connect A4A2P1 and A4A1J2.

  (5) Connect A4P3 to A4A1J1.

c. Install module cover by sliding it into place. Use 2 screws to secure cover.

5-19.2.4. Assembly of 1000-Watt Converter Module A2/A3.

a. To install A2A2/A3A2 circuit card:

  (1) Place A2A2/A3A2 in its mounted position.

  (2) Secure A2A2/A3A2 in place with 6 hex screw posts.

  (3) Connect A2P4/A3P4 to A2A2J1/A3A2J1.

b. To install A2A1/A3A1 circuit card:

(1) Place A2A1/A3A1 in its mounted position.

(2) Secure 2AA1/A3A1 in place with 5 screws, lockwashers, and flat washers.

(3) Attach additional stud, hex screw post lockwasher, and flat washer on A2A1/A3A1 and attaching cable clamp with a screw and flat washers.

(4) Connect A2A2P1/A3A2P1 to A2A1J2/A3A1J2.

(5) Connect A2P3/A3P3 to A2A1J1/A3A1J1.

c. Install module cover by sliding it into place. Use 2 screws to secure cover.

5-19.2.5. Installation of Digital Voltmeter Card A6.

a. Place dvm card A6 in its mounted position.

b. Secure A6 with the 4 screws, lockwashers, flat washers, and hex screw posts removed during disassembly.

c. Connect P2 to A6J1.

d. Reinstall 500-watt converter module A4, if A7 is already installed.

5-19.2.6. Installation of Crowbar/Logic Card A7.

a. Place crowbar/logic card A7 in its mounted position.

b. Secure A7 with 3 screws, lockwashers, flat washers, and hex screw posts removed during disassembly.

c. Connect P1 to A7J1.

d Reinstall 500-watt converter module A4, if A7 is already installed.

5-19.2.7. Installation of Plug-In Modules.

a. Align plug-in module (A2, A3, A4, A5) with its mating connector on chassis A1. Press module firmly in place.

b. Secure module in place using 4 captive screws (one in each corner of the module).

c. Replace unit top cover and secure it in place with the 14 screws removed in disassembly.

5-20. LCD-A-11 POWER SUPPLIES. The following steps test and adjust secure power supplies A2A1PS1 and A2A1PS2. If specified voltages cannot be obtained, replace the faulty power supply.

a. On power distribution panel assembly A2A1, set MAIN POWER circuit breaker CB1 to OFF.

b. Turn off primary power source; disconnect primary power cable from MAIN POWER connector J1 on power entry panel A2A6.

c. Remove two screws and washers on power distribution panel; hinge panel outward from power/secure rack A2.

d. Inside power/secure rack, remove two adjustment-hole screws from each access panel to power supplies A2A1PS1 and A2A1PS2.

WARNING

With primary power applied, lethal voltage is present at exposed terminals inside power/secure rack. Use extreme caution when reaching inside power/secure rack.

e. Reconnect primary power cable to power entry panel; turn on primary power source.

f. On power distribution panel assembly, set MAIN POWER circuit breaker CB1 and KW-7/KWX-11 circuit breaker CB10 to on.

g. Through top adjustment hole in PS1 access panel, adjust PS1 for -6 ±0.3 V between wire 5 (ground) and wire 4 (negative) of cable W007.

h. Through bottom adjustment hole in PS1 access panel, adjust PS1 for +6 ±0.3 V between wire 6 (ground) and wire 7 (negative) of cable W003.

CHAPTER VI

ILLUSTRATED PARTS BREAKDOWN

Section I. INTRODUCTION

6-1. INTRODUCTION TO ILLUSTRATED PARTS BREAKDOWN. This illustrated parts breakdown lists, describes, and illustrates the assemblies and detail parts of equipment manufactured by Rockwell International, Defense Electronics Operations. The IPB gives using agencies information for ordering, stocking, issuing and identifying parts. It also illustrates assembly and disassembly relationships. This IPB is for use with the following publications:

6-2. MAINTENANCE PARTS LIST. The Maintenance Parts List (MPL) breaks down assemblies and detail parts that can be taken apart, repaired, obtained from reclamation, built, reinstalled, replaced, or rebuilt at all maintenance levels. The MPL lists each item in order of disassembly, shows the proper assembly relationship of each item to its assembly, and shows the relationship of each to the complete end article.

6-2.1. Figure and Index Number Column. This column gives the figure number of the illustration that shows the assembly or detail part. It also shows the index number that cross-references the item between the parts list and the illustration.

6-2.2. Sheet Numbers. Sometimes we must use two or more illustrations to show a particular assembly. Such illustrations are numbered Sheet 1 o f 2, Sheet 2 of 2. When this arrangement is used, a diagonal precedes the sheet number. For example, /2-81 refers to Index Number 81 on Sheet 2 of the referenced figure.

6-2.3. Part Number. This column holds the design activity part number of each item. Part numbers for prime contractor, subcontractor, vendor, commercial parts, and government or industry standards are listed. When only a model/type number identifies a component, that number takes the place of a part number. Peculiar parts with no part number appear in the part-number field as NO NUMBER and are described. In general, this IPB lists and identifies assemblies and parts installed when the end item was manufactured. When a different assembly or part (including vendor items) has been installed in the manufacture of later items, series, or blocks, a usable-on code identifies it. (See paragraph 6-2. h.) However, when the original assembly or part can no longer be used (no spares of the original were bought, or the spares are no longer acceptable), the IPB lists only the preferred assembly or part. Also, when an assembly or part was installed during modification and the original can no longer be used, the IPB lists only the preferred item. The manual does not list interchangeable and substitute assemblies and parts later authorized by the government; the Interchangeable and Substitute (I&S) Data Systems identify such parts. Refer to TO 00-25-184.

6-2.4. FSCM. This column holds the Federal Supply Code for Manufacturers (FSCM) for all manufacturers and government agencies whose numbers appear in the part-number column. The word "none" will be inserted in this column when an FSCM is not published in the current issues of the H4 series of Cataloging Handbooks. When the word "none" is in the FSCM column, the complete name and address will appear in parentheses at the end of the description.

6-2.5. Description. This column contains the name of the item and descriptive information. This data shows relationships between assemblies, subassemblies, and detail parts.

6-2.6. Indentation System. The MPL uses identation, indicated by leader points (periods) to show relationships between assemblies, subassemblies, detail parts, and attaching parts. There is one point for each indentation, as shown in the following outline:

. Detail parts for end item, major assembly, component
. Assembly
. Attaching parts for assembly (AP)
. . Detail parts for assembly
. . Subassemblies
. . Attaching parts for subassemblies (AP)
. . . Sub-assemblies
. . . Attaching parts for sub-assemblies (AP)
. . . Detail parts for sub-assemblies

6-2.7. Units Per Assembly. This column shows the quantity of each detail part in an assembly or subassembly and of each attaching part for a single unit or assembly. The abbreviation REF (reference) means that an assembly is listed only for reference. Items that are needed as required are shown as AR.

6-2.8. Usable-On Code. This column uses an alphabetical code to show the configuration of the end items to which listed assemblies and detail parts apply. When a listing applies to all configurations, no code is given. The specific usable-on code for this IPB is as follows:

6-2.9. Similar Assemblies. When two or more assemblies are made up principally of identical parts, they are listed together; the assemblies are given first, and the detail parts follow. Parts common to all assemblies in the same quantity are listed once; those used in different quantities are listed once for each assembly and identified with the assembly to which they belong.

6-2.10. Attaching Parts. Attaching parts appear in the MPL immediately after the item to be attached and before any detail parts listed for that item. Attaching parts are captioned (AP) immediately after the description.

6-2.11. Symbols and Abbreviations. Abbreviations used follow MIL-STD-12C or are those required by the detail specification of the contract. The number (#) sign, used to indicate a GFE/CFE item, follows the part number in the PART NUMBER column. The asterisk (*) indicates markings on decalcomanias, metalcals, and vinyl film. It represents the statement: ''Requisition this marking according to the requirements of AFR6-4.'' Asterisks appear in the part-number field.

6-3. NUMERICAL INDEX. The Numerical Index contains all part numbers that appear in the MPL, including model and type numbers for components not assigned part numbers. (Refer to table 6-1.)

6-3.1. Part Number. Part-number arrangement begins at the extreme left and continues to the right, one position at a time. For the first character of a part number, the letters A through N and P through Z take precedence over numerals 0 through 9. (Alphabetical O's are considered numeric zeros.) For the second and succeeding characters of a part number, precedence is as follows: (1) diagonal, (2) period, (3) dash, (4) letters A through N, P through Z, (5) numerals 0 through 9.

6-3.2. Figure and Index Number. This column shows the figure and index number for all parts listed. When an assembly or detail part does not have an index number, the figure and index number of the previously listed item are used with an ''F'' prefix; this indicates that the listing follows that indexed part.

6-3.3. Quantity Per End Item. This column shows the total quantity for each end item. The abbreviations AR (as required) and REF (reference) are used when applicable.

6-3.4. Source, Maintenance, and Recoverability (SMR) Codes. This manual contains Joint Military Services Uniform SMR Codes only. Definitions of these SMR codes are available in TO 00-25-195.

6-4. REFERENCE DESIGNATION INDEX. The Reference Designation Index is an alphanumeric list of all the reference designations. It cross-references electrical/electronic parts illustrated in the MPL to the same parts shown on schematic and wiring diagrams in the associated maintenance manuals. (Refer to table 6-2.)

6-4.1. Figure and Index Number. This column contains the figure and index number for each reference designation listed. When a reference designated part does not have an index number, the figure and index number of the preceding part in the MPL are used with an "F" prefix; this indicates that the item follows the figures and index number listed.

6-5. MANUFACTURERS' CODE. This list includes the names, addresses, and Federal Supply code for Manufacturers (FSCM) of all manufacturers and government agencies. The absence of a vendor code in the MPL identifies the part number as that of Rockwell International, Defense Electronics Operations.

CODE	NAME AND ADDRESS
00141	PIC Design Corp. Sub of Wells-Benrus Co. Benrus Center P. O. Box 335 Ridgefield, CT 06877
00414	Columbia Products P. O. Box 4470 Columbia, SC 29240
00779	AMP Inc. P. O. Box 3608 Harrisburg, PA 17105
02660	Bunker Ramo Corp. Amphenol North America Div. 2801 S. 25th Ave. Broadview, IL 60153
03481	Goodrich B F Company Engineered Products Group 500 S. Main St. Akron, OH 44318
03914	Armstrong Bros. Tool Co. 5200 W. Armstrong Ave. Chicago, IL 60646
04569	National Wire and Cable Co. Inc. 136 San Fernando Rd. Los Angeles, CA 90031
05236	Jonathan Mfg. Corp. 1101 S. Acacia Ave. Fullerton, CA 92631
07707	USM Corp. Sub of Emhart Industries USM Fastener Div. 510 River Rd. Shelton, CT 06484
07886	National Radio Co. Inc. Commercial Products Div. 89 Washington St. Melrose, MA 02176
08805	General Electric Co. Lamp Business Div. Nela Park Cleveland, OH 44112
09729	Bullard E D Co. 2680 Bridgeway Sausalito, CA 94965
09922	Burndy Corp. Richards Ave. Norwalk, CT 06852
11815	Textron Inc. Cherry Fasteners Townsend Div. 1224 E. Warner Ave., Box 2157 Santa Ana, CA 92707
12615	U S Terminals Inc. 7504 Camargo Road Cincinnati, OH 45243
12954	Siemens Corp. Components Group 8700 E. Thomas Rd. P. O. Box 1390 Scottsdale, AZ 85252

CODE	NAME AND ADDRESS
12998	Quality Name Plate Inc. Mill Road East Glastonbury, CT 06025
13499	Rockwell International Corp. Collins Communications System Div. 3200 Renner Road CS.7 Richardson, TX 75081
15230	Frederick Electronics Corp. Hayward Rd. P. O. Box 502 Frederick, MD 21701
17244	McGraw-Edison Co. Halo Lighting Div. 400 Busse Rd. Elk Grove Village, IL 60007
20370	New Jersey Gasket and Mfg. Co. P. O. Box 55 Blackwood, NJ 08012
23657	Shakespeare Co. Industrial Products Div. P. O. Drawer 246 Columbia, SC 29202
23663	Joslyn Electronic Systems Division Joslyn Mfg. and Supply Co. 6868 Cortona Dr. P. O. Box 817 Goleta, CA 93017
24455	General Electric Co. Lamp Division Cleveland, OH
25088	Siemens Corp. 186 Wood Ave. S Iselin, NJ 08830
25184	Precision Rubber Products Corp. Hartman Drive Lebanon, TN 37087
27601	Aero Stop Nut Corp. 191 Fabyan Place Newark, NJ 07112
28198	Positronic Industries Inc. 208 W. Center St. Rogersville, MO 65742
28856	Telex Communications Inc. 9600 Aldrich Ave. South Minneapolis, MN 55420
29372	Rexnord Inc. Tridair Industries 3000 W. Lomita Blvd. Torrance, CA 90505
30463	Breeze-Illinois Inc. Sub of Breeze Corporations Main at Agard Sts. Wyoming, IL 61491
30817	Instrument Specialty Co. Inc. Broad St. P. O. Box A Delaware Water Gap, PA 18327
31356	J-B-T Instruments Inc. 394 East Street P. O. Box 1818 New Haven, CT 06508
45722	USM Corp. Sub of Emhart Industries Inc. Parker-Kalon Fastener Div. Campellsville, KY 42718
46384	Pen Engineering and Mfg. Corp. P. O. Box 311 Doylestown, PA 18901
49051	None
56289	Sprague Electric Co. 87 Marshall St. North Adams, MA 01247
57003	Lastomerics Ltd. 17314 S. Broadway Gardenia, CA 90248
59204	Akwell Industries Inc. Industrial Rd. P. O. Box 1252 Dothan, AL 36301

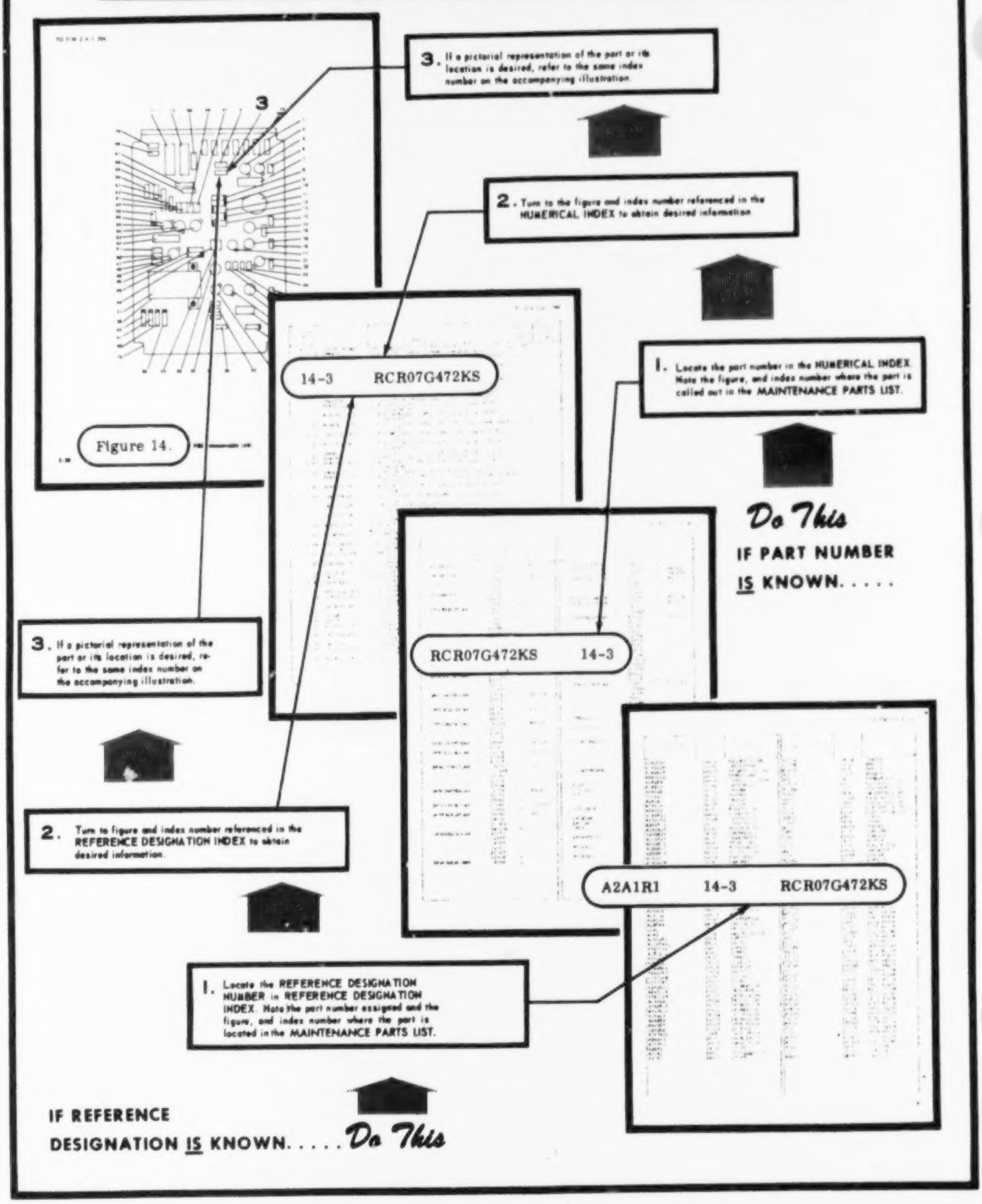
CODE	NAME AND ADDRESS
59730	Thomas and Betts Corp. Hwy. 218 S Iowa City, IA 52240
61864	TRW Inc. United-Carr Div. 31 Burlington Mall Rd. Burlington, MA 01803
65092	Weston Instruments Div. Sangamo Weston Inc. 614 Frelinghuysen Ave. Newark, NJ 07114
70318	Allmetal Screw Products Co. Inc. 821 Stewart Ave. Garden City, NY 11530
70485	Atlantic India Rubber Works Inc. 571 W. Polk St. Chicago, IL 60607
70675	ADC Products Div. Magnetic Controls Co. 4900 West 78th Street Minneapolis, MN 55435
71124	Brand-Rex Co. Rt. 32 P. O. Box 498 Willimantic, CT 06226
71279	Cambridge Thermionic Corp. 445 Concord Ave. Cambridge, MA 02138
71468	ITT Cannon Electric Div. of International Telephone and Telegraph Corp. 10550 Talbert Ave. P. O. Box 8040 Fountain Valley, CA 92708
71483	Clark David Co. Inc. 360 Franklin St. Worcester, MA 01604
72962	Esna Div. of Amerace Corp. 2330 Vauxhall Road Union, NJ 07083
73808	General Tire and Rubber Co. One General St. P. O. Box 951 Akron, OH 44329
74545	Hubbell Harvey Inc. 584 Derby Milford Rd. Orange, CT 06477
74547	Kearney-National Inc. Affil. of Dyson-Kissner- Moran Corp. 200 Park Ave. New York, NY 10166
76786	North and Judd A Gulf and Western Mfg. Co. 699 Middle St. P. O. Box 1111 Middletown, CT 06457
77147	Patton-MacGuyer Co. Div. of Avid Corp. 17 Virginia Ave. Providence, RI 02905
77250	Allied Products Corp. Pheoll Mfg. Co. Div. 5700 W. Roosevelt Rd. Chicago, IL 60650
77280	Bendix Corp. The Electrical Components Div. Sherman Ave. Sidney, NY 13838
79807	Wrought Washer Mfg. Inc. 2100 S. Bay St. Milwaukee, WI 53207
80058	Joint Electronic Designation System
80103	Veeco Instruments Inc. Lambda Electronics Div. 515 Broad Hollow Rd. Melville, NY 11746
80205	National Aerospace Standard

CODE	NAME AND ADDRESS
81348	Federal Specification
81349	Military Specifications
81350	Joint Army Navy
81541	Airpax Electronics Inc. Woods Rd. Cambridge, MD 21613
81774	Carol Wire and Cable Corp. 249 Roosevelt Ave. Pawtucket, RI 02860
81790	ITT Blackburn 1525 Woodson Rd. St. Louis, MO 63114
81812	Trimm Inc. 400 W. Lake P. O. Box 489 Libertyville, IL 60048
82204	Henry Products Div. Cardwell Condenser Corp. 80 E. Montauk Hwy. Lindenhurst, NY 11757
82240	Simmons Fastener Corp. Albany, NY
82877	Rotron Inc. Custom Div. 7 Hasbrouck Ln. Woodstock, NY 12498
83014	Hartwell Corp. 900 S. Richfield Rd. Placentia, CA 92670
83259	Parker-Hannifin Corp. O-Seal Div. 10567 Jefferson Blvd. Culver City, CA 90230
83324	Rosan Inc. 2901 W. Coast Highway Newport Beach, CA 92663
83330	Smith Herman H Inc. 812 Snediker Ave. Brooklyn, NY 11207
84411	TRW Inc. TRW Electronics Components Div. TRW Capacitors 301 West O St. Ogallala, NE 69153
84830	Lee Spring Co. Inc. 30 Main St. Brooklyn, NY 11201
85005	Ingersoll Products Corp. 1000 W. 120th St. Chicago, IL 60643
85480	Brady W H Co. 727 W. Glendale Ave. Milwaukee, WI 53209
88044	Aeronautical Standard
91836	Kings Electronics Co. Inc. 40 Marbledale Road Tuckahoe, NY 10707
92607	Tensolite Co. Div. Carlisle Corp. Old Post Rd., Route 9A Buchanan, NY 10511
92914	Berkley Machine Products Inc. 31520 Pamco Dr. Livonia, MI 48150
94222	Southco Inc. 210 N. Brinton Lake Rd. Concordville, PA 19331
94375	Automatic Connector Inc. 400 Moreland Rd. Commack, NY 11725
96238	Dataproducts New England Inc. Barnes Park North Wallingford, CT 06492
96881	Thomson Industries Inc. 1029 Plandome Rd. Manhasset, NY 11030
96906	Military Standard

CODE	NAME AND ADDRESS
97464	Industrial Retaining Ring Co. 57 Cordier St. Irvington, NJ 07111
99378	Atlee Corp. 8 Gill St. Woburn, MA 01801
99682	Carter Controls Inc. 3000 - 170th Lansing, IL 60438
99862	Carr Lane Mfg. Co. 4200 Carr Lane Ct. St. Louis, MO 63119

HOW TO USE THE ILLUSTRATED PARTS BREAKDOWN

IF PART NUMBER OR REFERENCE DESIGNATION IS KNOWN



IF PART NUMBER IS KNOWN..... *Do This*

1. Locate the part number in the **NUMERICAL INDEX**. Note the figure, and index number where the part is called out in the **MAINTENANCE PARTS LIST**.

2. Turn to the figure and index number referenced in the **NUMERICAL INDEX** to obtain desired information.

3. If a pictorial representation of the part or its location is desired, refer to the same index number on the accompanying illustration.

IF REFERENCE DESIGNATION IS KNOWN..... *Do This*

1. Locate the **REFERENCE DESIGNATION NUMBER** in **REFERENCE DESIGNATION INDEX**. Note the part number assigned and the figure, and index number where the part is located in the **MAINTENANCE PARTS LIST**.

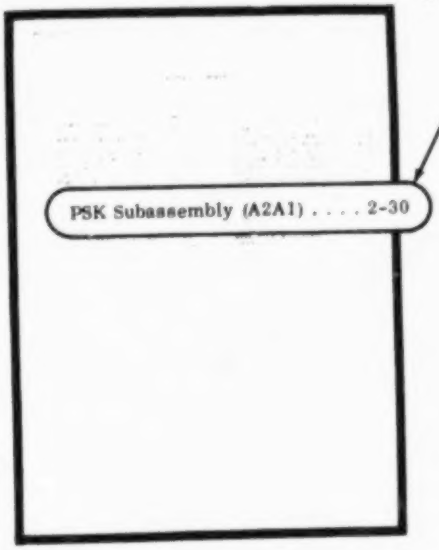
2. Turn to figure and index number referenced in the **REFERENCE DESIGNATION INDEX** to obtain desired information.

3. If a pictorial representation of the part or its location is desired, refer to the same index number on the accompanying illustration.

HOW TO USE THE ILLUSTRATED PARTS BREAKDOWN

IF PART NUMBER OR REFERENCE DESIGNATION IS NOT KNOWN

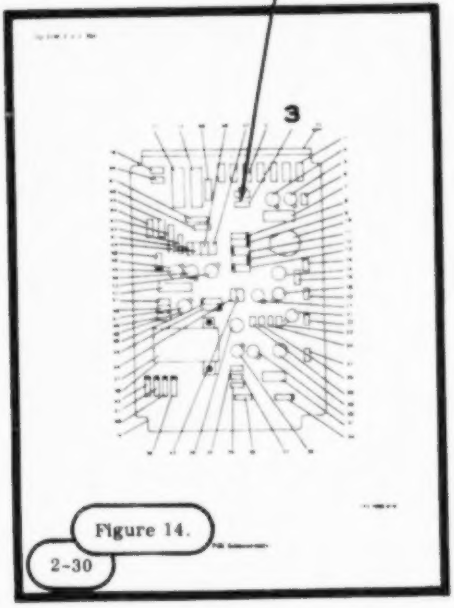
IF PART NUMBER IS NOT KNOWN. . . . . . *Do This*

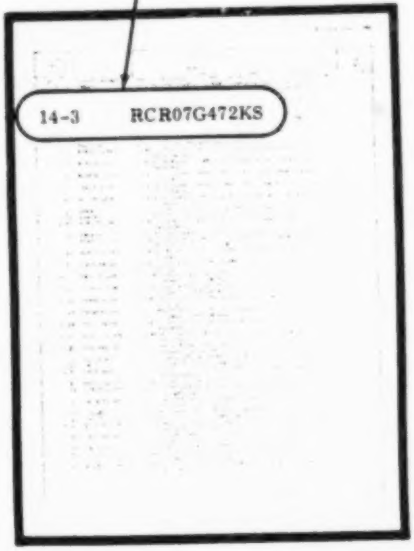


1. Turn to the TABLE OF CONTENTS which contains a list of all illustrations in the manual. From this list select the illustration most likely to contain the desired part.

2. Refer to page number of the illustration selected from TABLE OF CONTENTS. Locate the desired part on the illustration. Note index number.

3. Refer to corresponding MAINTENANCE PARTS LIST. Locate the index number selected from the illustration for part number, nomenclature, etc.





SECTION II
GROUP ASSEMBLY PARTS LIST

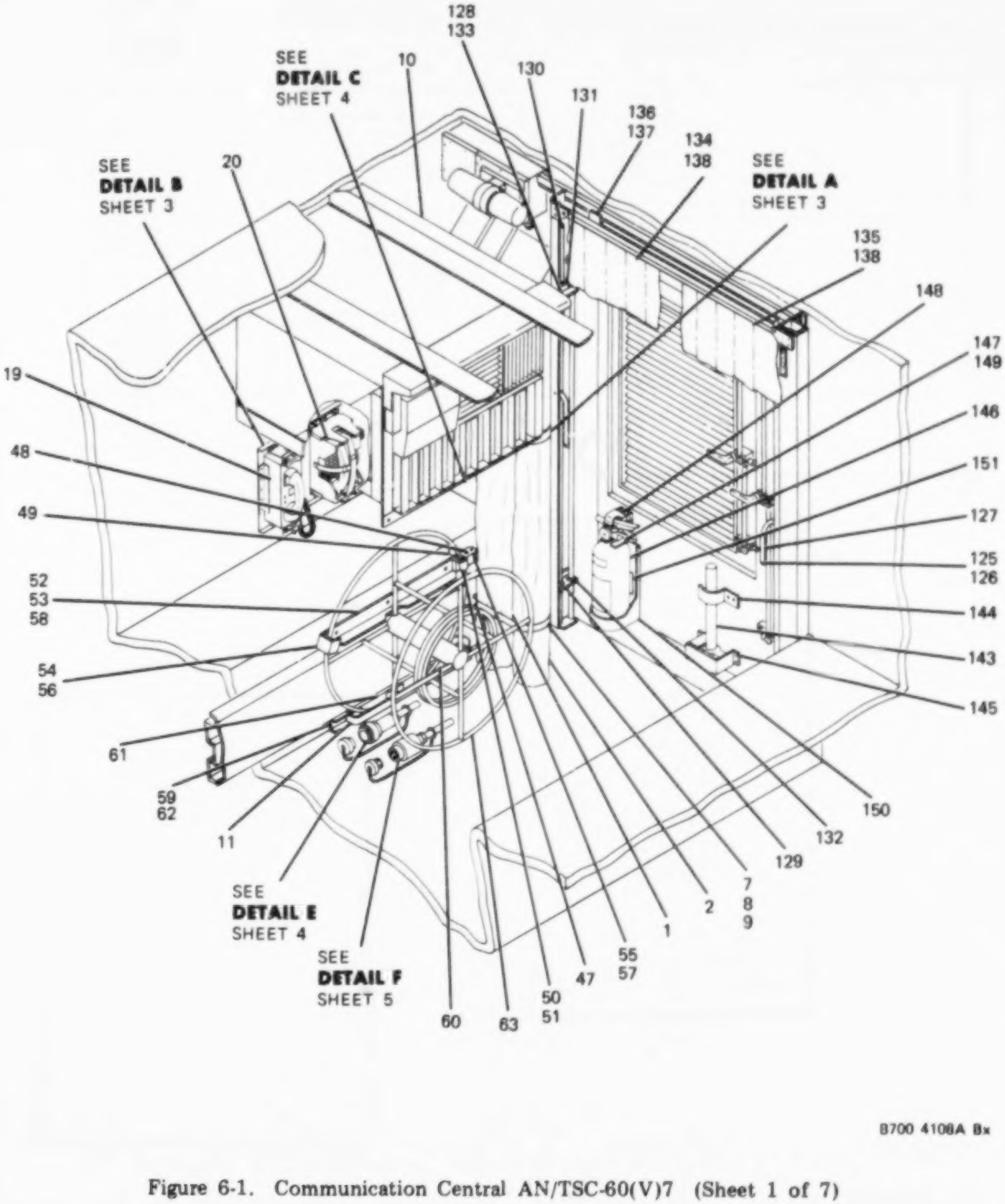

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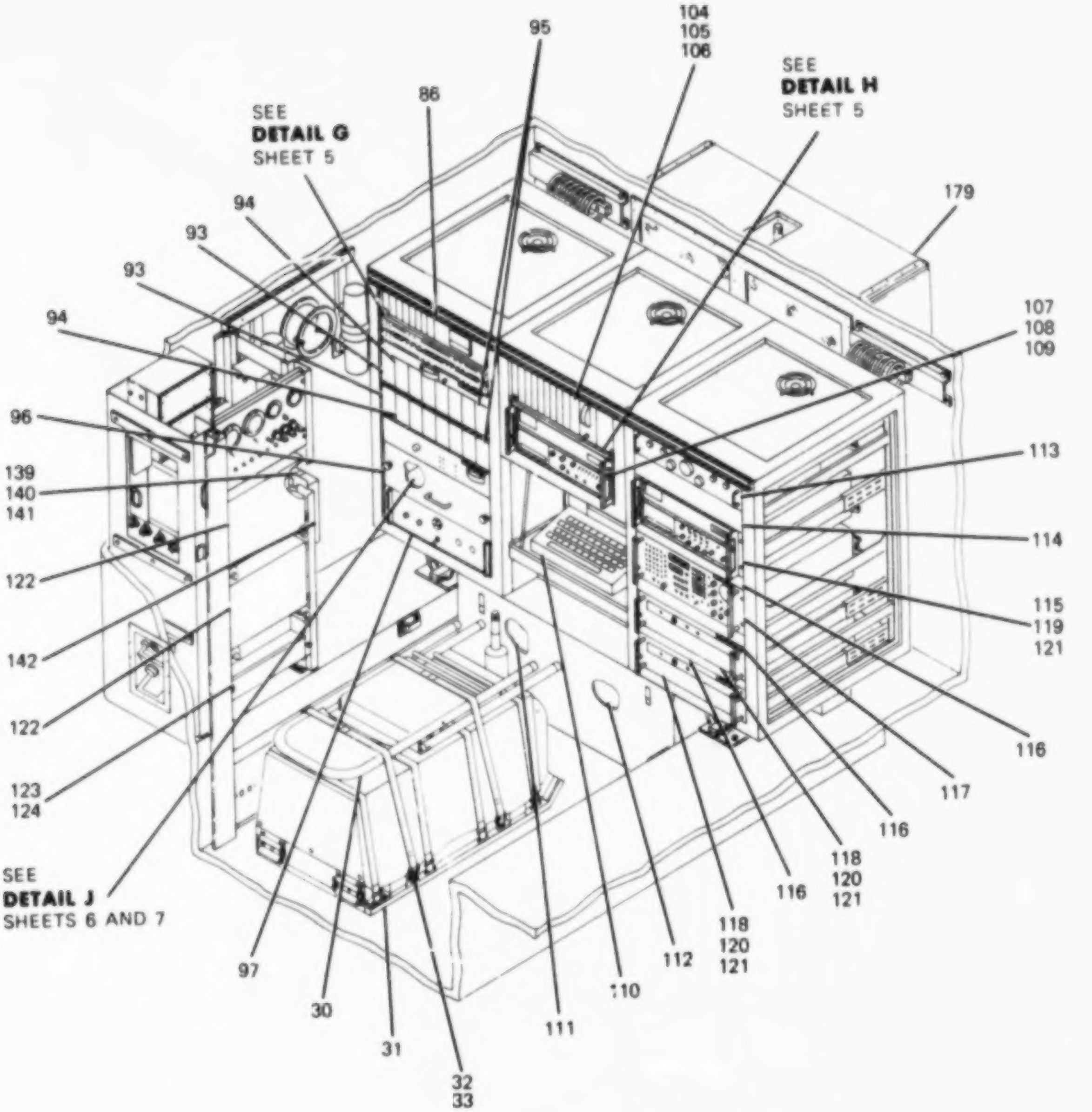
Figure 6-1. Communication Central AN/TSC-60(V)7 (Sheet 1 of 7)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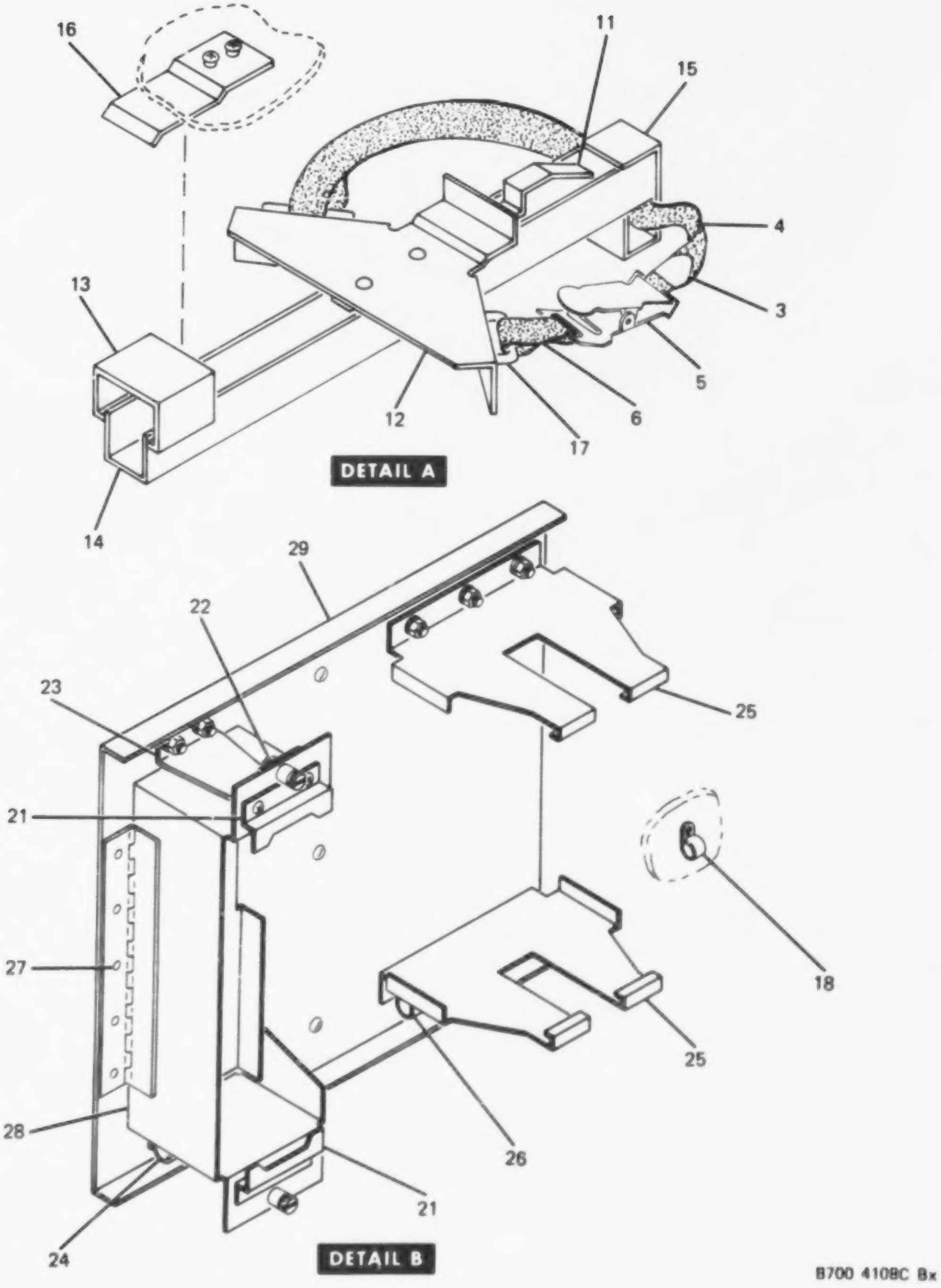
8700 41088 8x

Figure 6-1. Communication Central AN/TSC-60(V)7 (Sheet 2 of 7)


16
11
15
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17
DETAIL A
14
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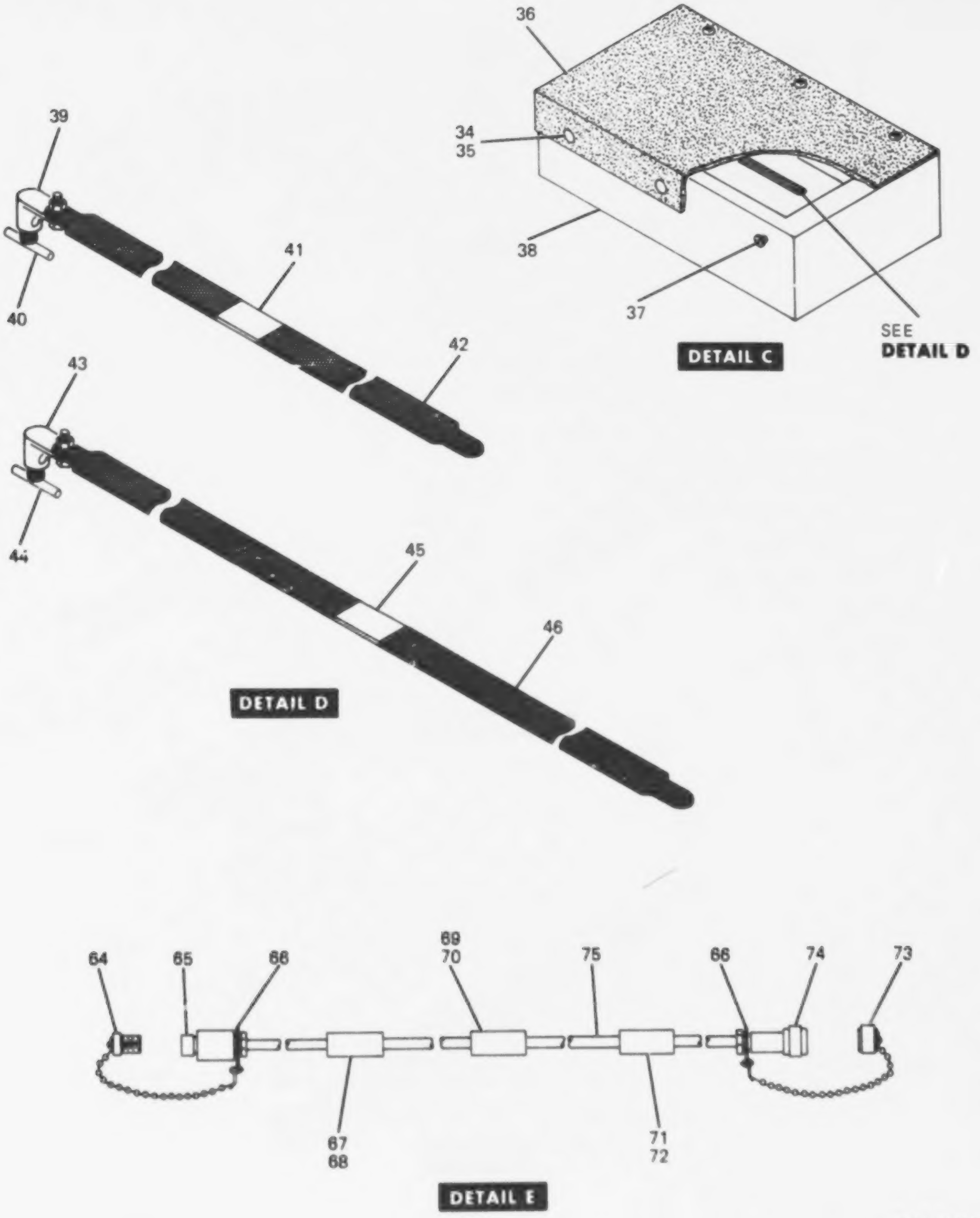
DETAIL B
B700 410BC Bx

Figure 6-1. Communication Central AN/TSC-60(V)7 (Sheet 3 of 7)


36
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SEE
DETAIL D
DETAIL C
39
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DETAIL D
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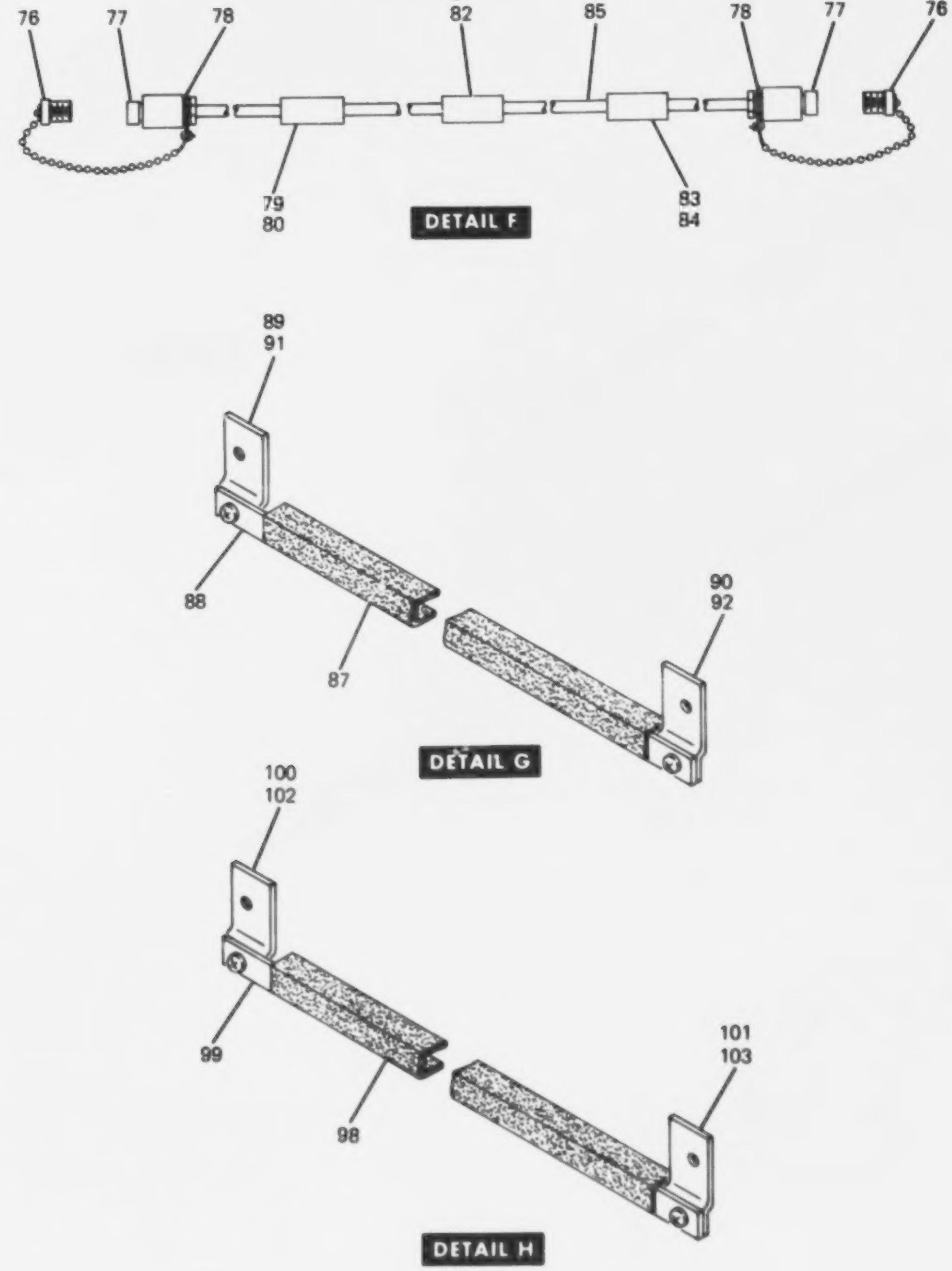
DETAIL E

8700 4108D Bx

Figure 6-1. Communication Central AN/TSC-60(V)7 (Sheet 4 of 7)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DETAIL F
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DETAIL G
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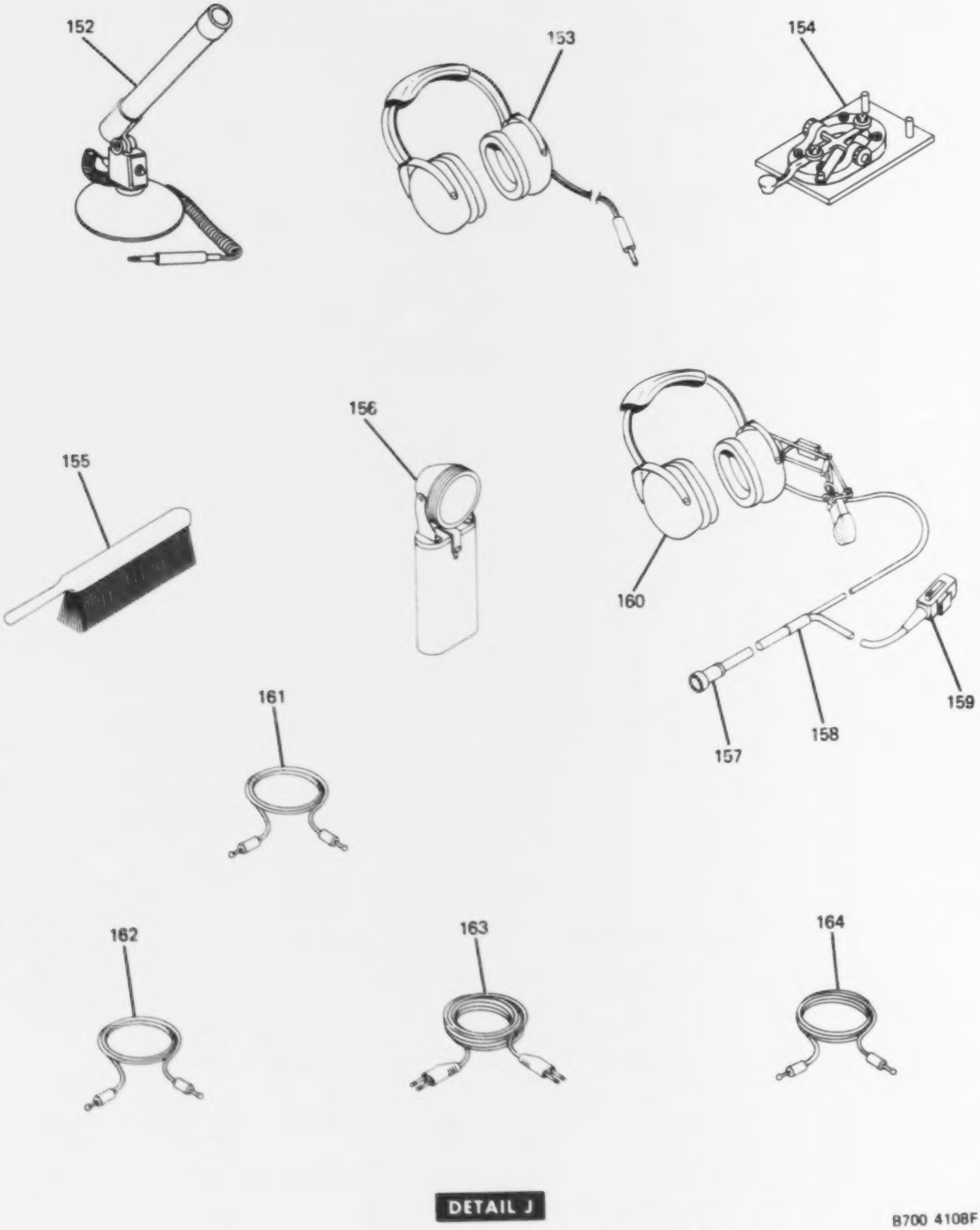
103
DETAIL H

8700 4108E Bx

Figure 6-1. Communication Central AN/TSC-60(V)7 (Sheet 5 of 7)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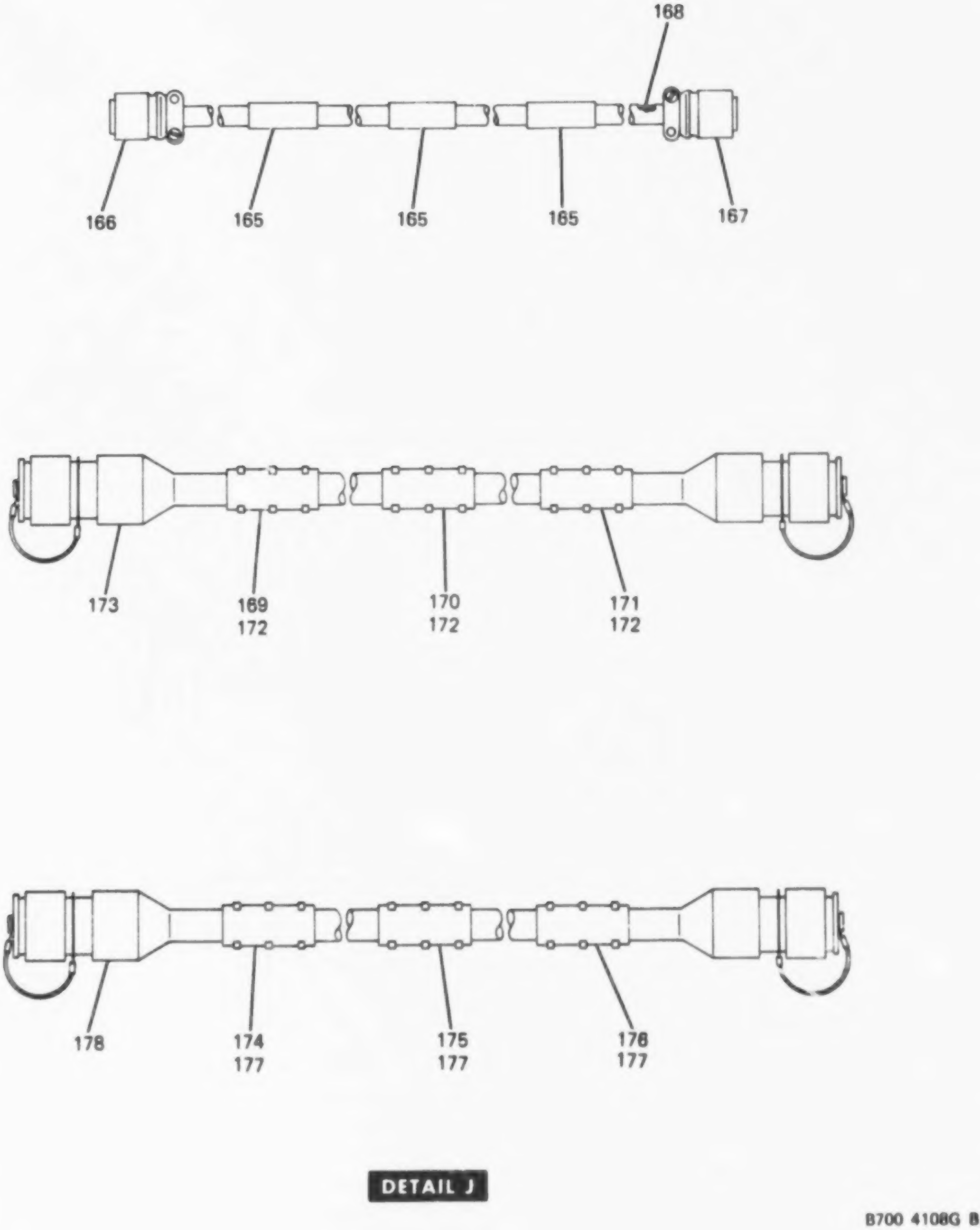
164
DETAIL J

8700 4108F Bx

Figure 6-1. Communication Central AN/TSC-60(V)7 (Sheet 6 of 7)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177
DETAIL J
B700 4108G Bx

Figure 6-1. Communication Central AN/TSC-60(V)7 (Sheet 7 of 7)

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
1	649-7147-001		COMMUNICATION CENTRAL AN/TSC-60(V)7	1	
/1-1	656-8749-001		. ANTENNA ASSEMBLY, TRANSMIT (SEE FIGURE 4 FOR BREAKDOWN)	1	
/1-2	656-9044-001		. ANTENNA ASSEMBLY, RECEIVE (SEE FIGURE 4 FOR BREAKDOWN)	1	
	656-9070-001		. STRAP, UPPER ANTENNA RETAINING	1	
/3-3	1IN3STL	76786	. . CLIP,END,STRAP 011-0083-000	1	
/3-4	656-9070-002		. . STRAP	3	
	656-9071-001		. STRAP, BUCKLE ANTENNA RETAINING	1	
/3-5	MS51929-2	96906	. . BUCKLE 011-0126-020	1	
/3-6	656-9071-002		. . STRAP	1	
	656-9069-001		. STRAP, LOWER ANTENNA RETAINING	1	
/1-7	1IN3STL	76786	. . CLIP,END,STRAP 011-0083-000	1	
/1-8	MS51929-2	96906	. . BUCKLE 011-0126-020	1	
/1-9	656-9071-002		. . STRAP	3	
/1-10	F9000H-3	94833	. CONTROL UNIT, ENVIRONMENT	1	
/1-11	656-9041-001		. BRACKET, RELEASE	1	
	AD66AH	07707	. RIVET,BLIND AL, 0.187 DIA X 0.575 305-2060-250 (AP)	2	
	656-9043-001		. BRACKET, ANTENNA	1	
/3-12	656-9043-005		. . MOUNT, HANDLE	1	
/3-13	656-9043-004		. . GUIDE, BRACKET	1	
/3-14	656-9043-003		. . BRACE, ANTENNA	1	
/3-15	656-9043-002		. . GUIDE, STRAP	1	
/3-16	656-9042-001		. BRACKET, FRAME	1	
	MS51960-64	96906	. SCREW 342-0223-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	MS35650-304	96906	. NUT 313-0019-000 (AP)	2	
/3-17	662R1-1X1-4CDPL	76786	. LOOP,STRAP FSTN 015-1255-000	2	
	MS51959-46	96906	. SCREW 342-0081-000 (AP)	4	
	MS15795-807	96906	. WASHER 310-0779-070 (AP)	4	
	MS35338-137	96906	. WASHER 310-0072-000 (AP)	4	
	MS35649-284	96906	. NUT 313-0017-000 (AP)	4	
/3-18	MS25281R5	96906	. CLAMP 150-0708-040	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	1	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	1	
/1-19	TA-312#		. TELEPHONE SET	1	
/1-20	TA-838#		. TELEPHONE SET	1	
	656-9072-001		. PANEL, PHONE MOUNTS	1	
/3-21	656-9064-001		. . CLAMP, PHONE MOUNT	2	
	MS51957-27	96906	. . SCREW 343-0168-000 (AP)	4	
	MS15795-805	96906	. . WASHER 310-0779-050 (AP)	4	
	656-9063-001		. . BRACKET, PHONE MOUNT	2	
	MS35650-304	96906	. . NUT 313-0019-000 (AP)	4	
	MS35338-138	96906	. . WASHER 310-0284-000 (AP)	4	
	MS15795-808	96906	. . WASHER 310-0779-080 (AP)	4	
/3-22	NCN10-1-4	07886	. . . NUT,CAPTIVE SST, 10-32 334-0436-000	1	
/3-23	656-9063-002		. . . BRACKET	1	
/3-24	MS25281R4	96906	. . CLAMP 150-0708-030	1	
/3-25	656-9051-001		. . BRACKET, TA-838	2	
	MS35650-304	96906	. . NUT 313-0019-000 (AP)	6	
	MS35338-138	96906	. . WASHER 310-0284-000 (AP)	6	
	MS15795-808	96906	. . WASHER 310-0779-080 (AP)	6	
/3-26	MS25281R4	96906	. . CLAMP 150-0708-030	1	
	656-9062-001		. . MOUNT, 1277B/PT AND TA-838	1	
/3-27	MS20426AD3-5	96906	. . . RIVET 305-1363-000	5	
/3-28	656-9062-002		. . . CHASSIS	1	
/3-29	656-9062-003		. . . PANEL	1	
/2-30	2200/AUTUMN BRONZE	02610	. CHAIR AUTUMN BRONZE	1	
/2-31	656-6888-001		. COUPLER ASSEMBLY, ANTENNA (SEE FIGURE 5 FOR BREAKDOWN)	1	

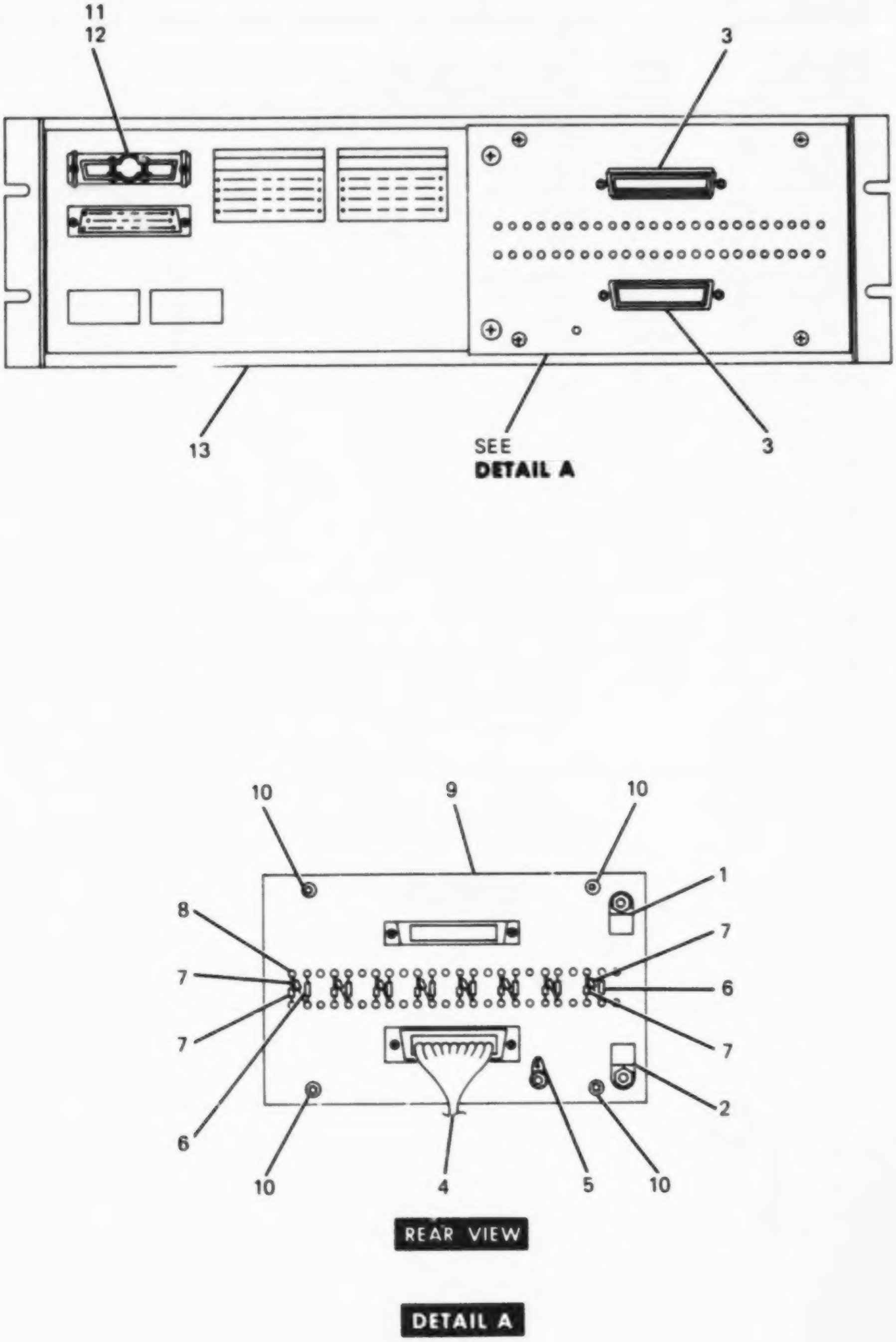
FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
1	656-3407-001		. EYEBOLT, COUPLER.	4	
/2-32	MS17830-5C	96906	. . NUT 333-0444-000.	1	
/2-33	126-5216-001		. . EYEBOLT	1	
	656-3410-001		. BOX ASSEMLBY, SLING STORAGE	1	
	MS51958-66	96906	. SCREW 343-0230-000 (AP)	3	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	3	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	3	
	656-3409-001		. . COVER, STOWAGE BOX.	1	
	MS51957-28	96906	. . SCREW 343-0169-000 (AP)	3	
	MS15795-805	96906	. . WASHER 310-0779-050 (AP).	6	
	MS21044C06	96906	. . NUT 333-1300-000 (AP)	3	
/4-34	X2-10128BLK	61864	. . . CAP,SNAP FSTNR 012-3209-000	3	
/4-35	2-17241	73808	. . . STUD,TURNLOCK FSTNR, CD PL STL, 0.187 DIA X 0.812 012-2310-000	3	
/4-36	656-3409-002		. . . COVER	1	
/4-37	BS10370BLK	61864	. . SOCKET,SNAP FAS 012-3211-000.	3	
	MS51959-30	96906	. . SCREW 342-0064-000 (AP)	3	
	MS15795-805	96906	. . WASHER 310-0779-050 (AP).	3	
	MS21044C06	96906	. . NUT 333-1300-000 (AP)	3	
/4-38	656-3403-001		. . BOX, SLING STOWAGE.	1	
	656-3405-001		. CLAMP, GROUND ROD	1	
	MS90725-6	96906	. SCREW 326-0009-000 (AP)	1	
	P310-0738-070	77250	. WASHER,FLAT NP BRS, 0.310 ID X 0.875 OD 310-0738-070 (AP)	2	
	MS17830-4C	96906	. NUT 333-0428-000 (AP)	1	
/4-39	L250HP	81790	. . TERMINAL,LUG 304-0310-000	1	
/4-40	656-3405-002		. . BAR	1	
/4-41	656-9058-003		. MARKER, CABLE	1	
/4-42	QQB575R30T656	81348	. BRAID,WIRE 425-0001-070	4	
	656-3405-001		. CLAMP, GROUND ROD	1	
	MS90725-6	96906	. SCREW 326-0009-000 (AP)	1	
	P310-0738-070	77250	. WASHER,FLAT NP BRS, 0.310 ID X 0.875 OD 310-0738-070 (AP)	2	
	MS17830-4C	96906	. NUT 333-0428-000 (AP)	1	
/4-43	L250HP	81790	. . TERMINAL,LUG 304-0310-000	1	
/4-44	656-3405-002		. . BAR	1	
/4-45	656-9058-004		. MARKER, CABLE	1	
/4-46	QQB575R30T656	81348	. BRAID,WIRE 425-0001-070	6	
/1-47	662R1-1X1-4CDPL	76786	. LOOP,STRAP FSTN 015-1255-000.	2	
/1-48	CL-4-BLP-T-2.0	99682	. PIN,QUICK RELEASE CD PL STL, 0.289DIAX2.275L 015-4084-010	2	
	AD66AH	07707	. RIVET,BLIND AL, 0.187 DIA X 0.575 305-2060-250 (AP)	2	
/1-49	LW1023-1-6-0	83014	. WIRE ROPE ASSY 432-1120-000	2	
	656-8742-001		. HOLDER, CABLE REEL.	1	
	MS90726-16	96906	. SCREW 326-0200-000 (AP)	1	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	2	
	MS21044C4	96906	. NUT 333-1303-000 (AP)	1	
/1-50	656-8742-003		. . HOLDER.	1	
/1-51	656-8742-002		. . BRACKET	1	
	656-8743-001		. HOLDER, BOTTOM, CABLE REEL.	1	
	NAS517-4-25	80205	. SCREW 342-1353-530 (AP)	1	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	1	
	MS21044C4	96906	. NUT 333-1303-000 (AP)	1	
/1-52	656-8743-003		. . TUBE, PIVOT	1	
/1-53	656-8743-002		. . HOLDER.	1	
	656-8741-001		. BRACKET, HOLDER, CABLE REEL	1	
	MS90725-33	96906	. SCREW 326-0170-000 (AP)	3	
	MS35338-140	96906	. WASHER 310-0290-000 (AP).	3	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	3	
/1-54	656-8741-006		. . HOLDER, REEL.	1	
/1-55	656-8741-005		. . TUBE, PIVOT PIN	1	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
1 /1-56	656-8741-004		. . BRACE	1	
/1-57	656-8741-003		. . BRACKET, RIGHT SIDE	1	
/1-58	656-8741-002		. . BRACKET	1	
	656-8744-001		. BRACKET, BOTTOM	1	
	MS90725-33	96906	. SCREW 326-0170-000 (AP)	2	
	MS35338-140	96906	. WASHER 310-0290-000 (AP)	2	
	MS15795-812	96906	. WASHER 310-0779-120 (AP)	2	
/1-59	656-8744-005		. . TUBE, PIVOT	1	
/1-60	656-8744-004		. . BRACKET	1	
/1-61	656-8744-003		. . PLATE	1	
/1-62	656-8744-002		. . CHANNEL	1	
/1-63	HP176-9J	82204	. REEL,CABLE 015-3425-020	1	
	656-7193-001		. CABLE ASSEMBLY, COAXIAL	1	
/4-64	RF-02153A	94375	. . COVER,ELEC CONN 357-7199-120	1	
/4-65	M39012-01-0005	81349	. . CONNECTOR 357-9326-000	1	
/4-66	656-6961-001		. . RETAINER, CAP	2	
	MS51957-3	96906	. . SCREW 343-0124-000 (AP)	2	
	MS15795-803	96906	. . WASHER 310-0779-030 (AP)	4	
	MS21044C04	96906	. . NUT 333-1299-000 (AP)	2	
/4-67	656-3401-007		. . MARKER, CABLE	1	
/4-68	MS3367-1-9	96906	. . CLAMP 435-1131-000	3	
/4-69	656-3401-008		. . MARKER, CABLE	1	
/4-70	MS3367-1-9	96906	. . CLAMP 435-1131-000	3	
/4-71	656-3401-009		. . MARKER, CABLE	1	
/4-72	MS3367-1-9	96906	. . CLAMP 435-1131-000	3	
/4-73	M39012-25-0011	81349	. . COVER 357-9358-000	1	
/4-74	M39012-02-0003	81349	. . CONNECTOR 357-9326-010	1	
/4-75	126-5185-001		. . CABLE, COAX	AR	
	656-7194-001		. CABLE ASSEMBLY, COAXIAL	1	
/5-76	RF-02153A	94375	. . COVER,ELEC CONN 357-7199-120	2	
/5-77	M39012-01-0005	81349	. . CONNECTOR 357-9326-000	2	
/5-78	656-6961-001		. . RETAINER, CAP	2	
	MS51957-3	96906	. . SCREW 343-0124-000 (AP)	2	
	MS15795-803	96906	. . WASHER 310-0779-030 (AP)	4	
	MS21044C04	96906	. . NUT 333-1299-000 (AP)	2	
/5-79	656-3401-010		. . MARKER	1	
/5-80	MS3367-1-9	96906	. . CLAMP 435-1131-000	3	
/5-81	656-3401-011		. . MARKER, CABLE	1	
/5-82	MS3367-1-9	96906	. . CLAMP 435-1131-000	3	
/5-83	656-3401-012		. . MARKER, CABLE	1	
/5-84	MS3367-1-9	96906	. . CLAMP 435-1131-000	3	
/5-85	126-5185-001		. . CABLE COAX	AR	
/2-86	656-8704-001		. PANEL ASSEMBLY, HL INTERFACE (SEE FIGURE 2 FOR BREAKDOWN)	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
	656-9066-001		. SHIELD, FSK	1	
	MS51957-31	96906	. SCREW 343-0173-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP)	2	
/5-87	M23053-5-109-0	81349	. SLEEVING 152-3973-000	2	
/5-88	656-9066-002		. . SHIELD	1	
	656-9067-001		. MOUNT, SHIELD	1	
	MS51958-66	96906	. SCREW 343-0230-000 (AP)	1	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	1	
/5-89	FPN6-32SCL	83324	. . PRESS NUT CD PL STL, 6-32 334-1152-000	1	
/5-90	656-9067-003		. . MOUNT	1	
	656-9067-002		. MOUNT, SHIELD	1	
	MS51958-66	96906	. SCREW 343-0230-000 (AP)	1	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	1	
/5-91	FPN6-32SCL	83324	. . PRESS NUT CD PL STL, 6-32 334-1152-000	1	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
1 /5-92	656-9067-004		. . MOUNT	1	
/2-93	90416001-006	96238	. KEYER (SEE SEPARATE PUBLICATION T.O. 31W2-2T-102) 126-5193-001	8	
/2-94	90416002-006	96238	. CONVERTER (SEE SEPARATE PUBLICATION T.O. 31W2-2T-102) 126-5191-001	8	
/2-95	656-6893-001		. PLATE, DUMMY KEYER/CONVERTER.	2	
/2-96	656-6953-001		. DRAWER ASSEMBLY (SEE FIGURE 3 FOR BREAKDOWN).	1	
	MS51958-62	96906	. SCREW 343-0227-000 (AP)	8	
/2-97	D5227-2	15230	. LOOP POWER SUPPLY (SEE SEPARATE PUBLICATIONS T.O. 31S1-2TSC60-301 126-5192-003 OR TM 11-5895-1185-13-2)	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	4	
	656-9066-001		. SHIELD, FSK	1	
	MS51957-31	96906	. SCREW 343-0173-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
/5-98	M23053-5-109-0	81349	. . SLEEVING 152-3973-000	2	
/5-99	656-9066-002		. . SHIELD.	1	
	656-9067-001		. MOUNT, SHIELD	1	
/5-100	FPN6-32SCL	83324	. . PRESS NUT CD PL STL, 6-32 334-1152-000.	1	
/5-101	656-9067-003		. . MOUNT	1	
	656-9067-002		. MOUNT, SHIELD	1	
	MS51958-66	96906	. SCREW 343-0230-000 (AP)	2	
/5-102	FPN6-32SCL	83324	. . PRESS NUT CD PL STL, 6-32 334-1152-000.	1	
/5-103	656-9067-004		. . MOUNT	1	
/2-104	D5379	15230	. OR TM 11-5895-1185-13-2).	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	4	
/2-105	656-9073-001		. RETAINER, AC CORD	1	
/2-106	MS3367-4-9	96906	. TIE 435-1169-100.	1	
/2-107	622-3473-005		. TRANSMITTER, RADIO T-1453/TSC-60(V) (SEE SEPARATE PUBLICATION T.O. 31S1-2TSC60-211)	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	4	
/2-108	656-9073-001		. RETAINER, AC CORD	1	
/2-109	MS3367-4-9	96906	. TIE 435-1169-100.	1	
/2-110	AN/UGC-74 (V)38		. TELETYPE.	1	
/2-111	622-3512-002		. POWER SUPPLY, 1KW (SEE SEPARATE PUBLICATIONS T.O. 31S1-2TSC60-291 OR TM 11-5895-1185-13-1)	1	
	MS51957-45	96906	. SCREW 343-0189-000 (AP)	12	
/2-112	622-3490-002		. AMPLIFIER, RADIO FREQUENCY (SEE SEPARATE PUBLICATIONS TO 31S1- 2TSC60-291 OR TM 11-5895-1185-13-1)	1	
	MS51957-45	96906	. SCREW 343-0189-000 (AP)	12	
/2-113	MPC1000T-LC0	59204	. FSK MODEM	1	
/2-114	785-5622-099		. PANEL, BLANK.	1	
/2-115	622-3475-006		. RECEIVER, RADIO R-2222/TSC-60(V) (SEE SEPARATE PUBLICATION T.O. 31S1-2TSC60-201)	1	
/2-116	785-5622-097		. PANEL, BLANK.	3	
/2-117	622-6016-001		. CONTROL-MONITOR C-11070/TSC-60(V) (SEE SEPARATE PUBLICATION T.O. 31S1-2TSC60-181)	1	
/2-118	622-3386-001		. FILTER BANDPASS F-1531/TSC-60(V) (SEE SEPARATE PUBLICATION T.O. 31S1-2TSC60-271)	2	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	36	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	36	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	36	
/2-119	656-9073-001		. RETAINER, AC CORD	1	
/2-120	656-6926-001		. RETAINER, AC CORD-PRESEL.	2	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
1 /2-121	MS3367-4-9	96906	. TIE 435-1169-100.	3	
/2-122	TSEC/KW-70		. TSEC.	2	
/2-123	TSEC/KWX-110		. TSEC.	1	
	MS51958-81	96906	. SCREW 343-0837-000 (AP)	16	
	MS35338-139	96906	. WASHER 310-0288-000 (AP).	16	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	16	
/2-124	656-8752-001		. SHIM, KWX-11.	4	
	656-3408-001		. STRAP, BLACKOUT CURTAIN	2	
	MS51957-43	96906	. SCREW 343-0187-000 (AP)	1	
	MS51959-43	96906	. SCREW 342-0078-000 (AP)	1	
	MS35338-137	96906	. WASHER 310-0072-000 (AP).	2	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	2	
	MS35649-284	96906	. NUT 313-0017-000 (AP)	1	
/1-125	X2-10128BLK	61864	. . CAP,SNAP FSTNR 012-3209-000	1	
/1-126	2-17241	73808	. . STUD,TURNLOCK FSTNR, CD PL STL, 0.187 DIA X 0.812 012-2310-000	1	
/1-127	656-3408-002		. . STRAP	1	
/1-128	656-8747-001		. BRACKET HOLDER, GROUND ROD.	1	
	MS51957-81	96906	. SCREW 343-0267-000 (AP)	1	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	3	
	MS35338-139	96906	. WASHER 310-0288-000 (AP).	1	
	MS17830-4C	96906	. NUT 333-0428-000 (AP)	1	
/1-129	656-8748-001		. BRACKET, BOTTOM, GROUND ROD	1	
	MS51957-42	96906	. SCREW 343-0186-000 (AP)	2	
	MS35338-137	96906	. WASHER 310-0072-000 (AP).	2	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	2	
/1-130	9425	74547	. ROD,GROUND 015-4508-000	2	
/1-131	656-3415-001		. PAD, GROUND-ROD	2	
/1-132	MS35489-14	96906	. GROMMET 201-0006-000.	2	
/1-133	656-8746-001		. BRACKET, TOP, GROUND ROD.	1	
	MS51957-42	96906	. SCREW 343-0186-000 (AP)	2	
	MS35338-137	96906	. WASHER 310-0072-000 (AP).	2	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	2	
/1-134	656-8725-001		. CURTAIN, AFT BLACKOUT	1	
/1-135	656-8726-001		. CURTAIN, FORWARD BLACKOUT	1	
	MS51957-26	96906	. SCREW 343-0167-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
	656-9049-001		. PLATE, LOCKING- BLACKOUT CURTAIN.	2	
/1-136	NCN6-1-2	07886	. . NUT,CAPTIVE SST, 6-32 334-0426-000.	1	
/1-137	656-9049-002		. . PLATE	1	
/1-138	656-9048-001		. CLAMP	2	
	656-9068-001		. STRAP, FIRST AID.	1	
	MS51958-62	96906	. SCREW 343-0227-000 (AP)	2	
/2-139	MS51929-2	96906	. . BUCKLE 011-0126-020	1	
/2-140	1IN3STL	76786	. . CLIP,END,STRAP 011-0083-000	1	
/2-141	656-9068-002		. . STRAP	3	
/2-142	116	09729	. FIRST AID KIT 015-1199-000.	1	
/1-143	TY10CL1-2 1-2LB	81348	. HAMMER,HAND 024-0454-010.	1	
/1-144	656-7172-001		. RETAINER, HAMMER HANDLE	1	
	MS51957-46	96906	. SCREW 343-0190-000 (AP)	2	
	MS35338-137	96906	. WASHER 310-0072-000 (AP).	2	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	2	
/1-145	656-7171-001		. RETAINER, HAMMER.	1	
	MS51957-46	96906	. SCREW 343-0190-000 (AP)	4	
	MS35338-137	96906	. WASHER 310-0072-000 (AP).	4	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	4	
/1-146	126-5213-001		. FIRE EXTINGUISHER	1	
/1-147	656-9056-001		. BRACKET, RETAINER	1	
	MS51957-47	96906	. SCREW 343-0191-000 (AP)	3	
	MS35338-137	96906	. WASHER 310-0072-000 (AP).	3	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	3	
/1-148	656-9055-001		. RETAINER, EXTINGUISHER.	1	
	MS51958-75	96906	. SCREW 343-0241-000 (AP)	1	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
1	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	1	
/1-149	LE-045D-6SS	84830	. SPRING	1	
/1-150	656-8732-001		. BRACKET, FIRE EXTINGUISHER	1	
	MS51957-46	96906	. SCREW 343-0190-000 (AP)	6	
	MS35338-137	96906	. WASHER 310-0072-000 (AP)	6	
	MS15795-807	96906	. WASHER 310-0779-070 (AP)	6	
/1-151	656-9076-001		. PAD, EXTINGUISHER	1	
/6-152	SM-3#		. MICROPHONE	1	
/6-153	H-216/U#		. HEADSET	1	
/6-154	J-38#		. CW KEY	1	
/6-155	656	45092	. BRUSH, HAND	1	
/6-156	MODEL NO. 2106-7	32572	. FLASH LIGHT	1	
	656-3420-001		. HEADSET/MIC ASSEMBLY - MODIFIED	1	
/6-157	MS3116F10-6P	96906	. . CONNECTOR 371-5308-000	1	
/6-158	656-3420-002		. . MARKER	1	
/6-159	63777-000	28856	. . SWITCH,MICROPHONE 266-0281-010	1	
/6-160	H10-30	71483	. . HEADSET,MICROPHONE 273-0047-010	1	
/6-161	PJ-71	70674	. CORD ASSEMBLY 361-0369-020	2	
/6-162	4-15189-7120	70674	. CORD ASSY,ELEC 361-0272-000	4	
/6-163	4-15346-7620	70674	. CORD ASSY,ELEC 361-0284-000	10	
/6-164	4-15189-7140	70674	. CORD ASSY,ELEC 361-0273-000	4	
	656-7094-001		. CABLE ASSEMBLY, SIGNAL	1	
/7-165	152-0077-020	85480	. . LABEL,CA MKR	3	
/7-166	MS3116F16-26P	96906	. . CONNECTOR 371-8137-000	1	
/7-167	MS3116F14-19S	96906	. . CONNECTOR 371-6458-000	1	
/7-168	439-0694-010	13499	. . CABLE,SP,ELEC	2	
	656-9079-001		. CABLE ASSEMBLY, COUPLER CONTROL	1	
/7-169	656-3401-001		. . MARKER, CABLE	1	
/7-170	656-3401-002		. . MARKER, CABLE	1	
/7-171	656-3401-003		. . MARKER, CABLE	1	
/7-172	MS3367-1-9	96906	. . CLAMP 435-1131-000	9	
/7-173	126-5215-001		. . CABLE	1	
	656-9080-001		. CABLE ASSEMBLY, COUPLER CONTROL	1	
/7-174	656-3401-004		. . MARKER, CABLE	1	
/7-175	656-3401-005		. . MARKER, CABLE	1	
/7-176	656-3401-006		. . MARKER, CABLE	1	
/7-177	MS3367-1-9	96906	. . CLAMP 435-1131-000	9	
/7-178	126-5215-002		. . CABLE	1	
/2-179	656-6900-001		. SHELTER-WIRED, AN/TSC-60(V)7 (SEE FIGURE 6 FOR BREAKDOWN)	1	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REAR VIEW
DETAIL A

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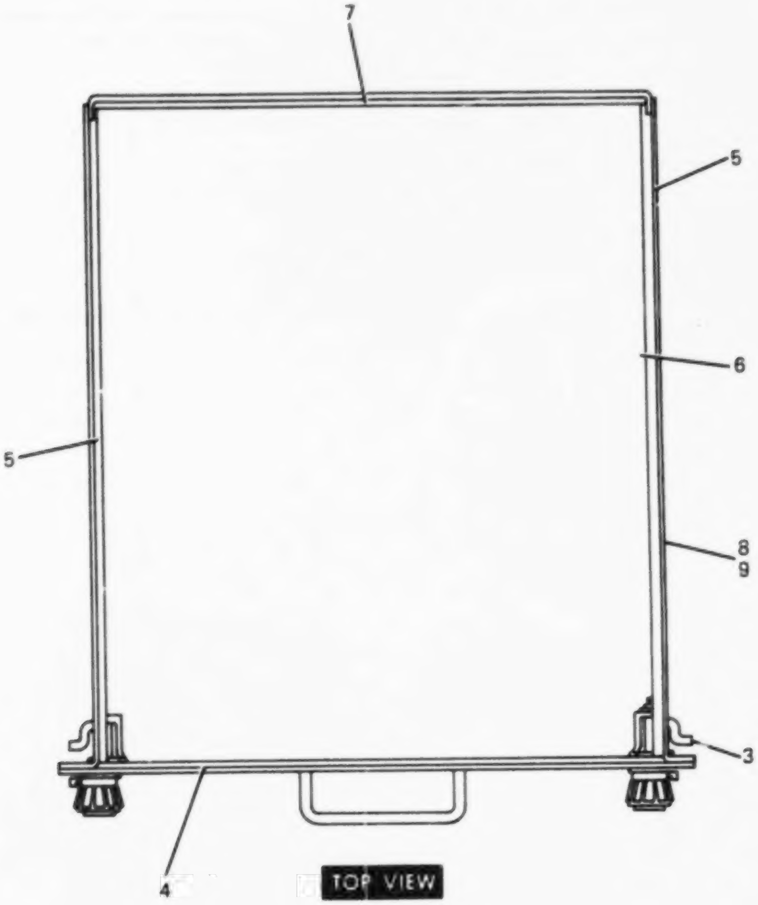
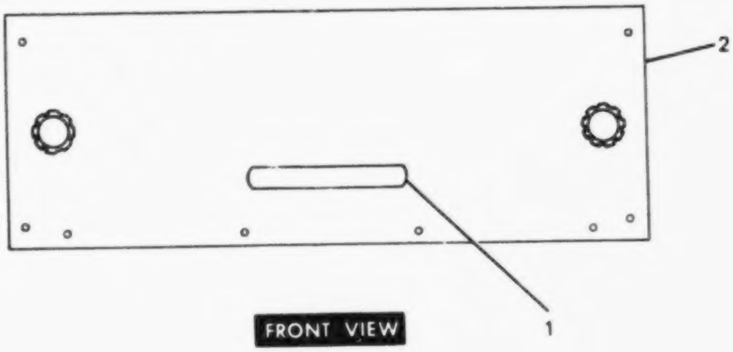
Figure 6-2. HL Interface Panel Assembly

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
2	656-8704-001		PANEL ASSEMBLY, HL INTERFACE (SEE FIGURE 1 FOR NHA)	REF	
-1	MS25281R4	96906	. CLAMP 150-0708-030	1	
	MS51957-46	96906	. SCREW 343-0190-000 (AP)	1	
	MS15795-807	96906	. WASHER 310-0779-070 (AP)	2	
	MS35338-137	96906	. WASHER 310-0072-000 (AP)	1	
	MS35649-284	96906	. NUT 313-0017-000 (AP)	1	
-2	MS25281R7	96906	. CLAMP 150-0708-060	1	
	MS51957-46	96906	. SCREW 343-0190-000 (AP)	1	
	MS15795-807	96906	. WASHER 310-0779-070 (AP)	2	
	MS35338-137	96906	. WASHER 310-0072-000 (AP)	1	
	MS35649-284	96906	. NUT 313-0017-000 (AP)	1	
-3	HDC50M-200-59	28198	. CONNECTOR,RCPT ELEC 371-0181-000	2	
	M24308/26-1	81349	. SCREW 371-0062-000 (AP)	2	
-4	439-0694-010	13499	. CABLE,SP,ELEC	AR	
-5	MS77068-1	96906	. TERMINAL 304-3110-010	1	
	MS51957-14	96906	. SCREW 343-0134-000 (AP)	1	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	2	
	MS35338-135	96906	. WASHER 310-0279-000 (AP)	1	
	MS35649-244	96906	. NUT 313-0043-000 (AP)	1	
-6	RCR07G222KS	81349	. RESISTOR 745-0761-000	8	
-7	1N752A	12954	. SEMICOND DEVICE 353-2712-000	16	
-8	SL439-433WHT	12615	. TERMINAL,STDF 306-1521-000	48	
-9	656-8703-001		. PANEL, HL INTERFACE	1	
	MS51957-22	96906	. SCREW 343-0142-000 (AP)	4	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	4	
	MS35338-135	96906	. WASHER 310-0279-000 (AP)	4	
-10	541-5995-002		. SPACER, SLEEVE	4	
-11	DD50PC37	71468	. CONNECTOR,RCPT ELEC 371-0118-000	1	
	D20420-15	71468	. SCREW LOCK ASSEMBLY 371-0040-060 (AP)	2	
-12	DA20964	71468	. ADAPTER 371-0187-000	1	
-13	D5307	15230	. FREDERICK 1290 HL INTERFACE (SEE SEPARATE PUBLICATION T.O. 31S1-2TSC60-301 OR TM 11-5895-1185-13-2	1	



TOP VIEW

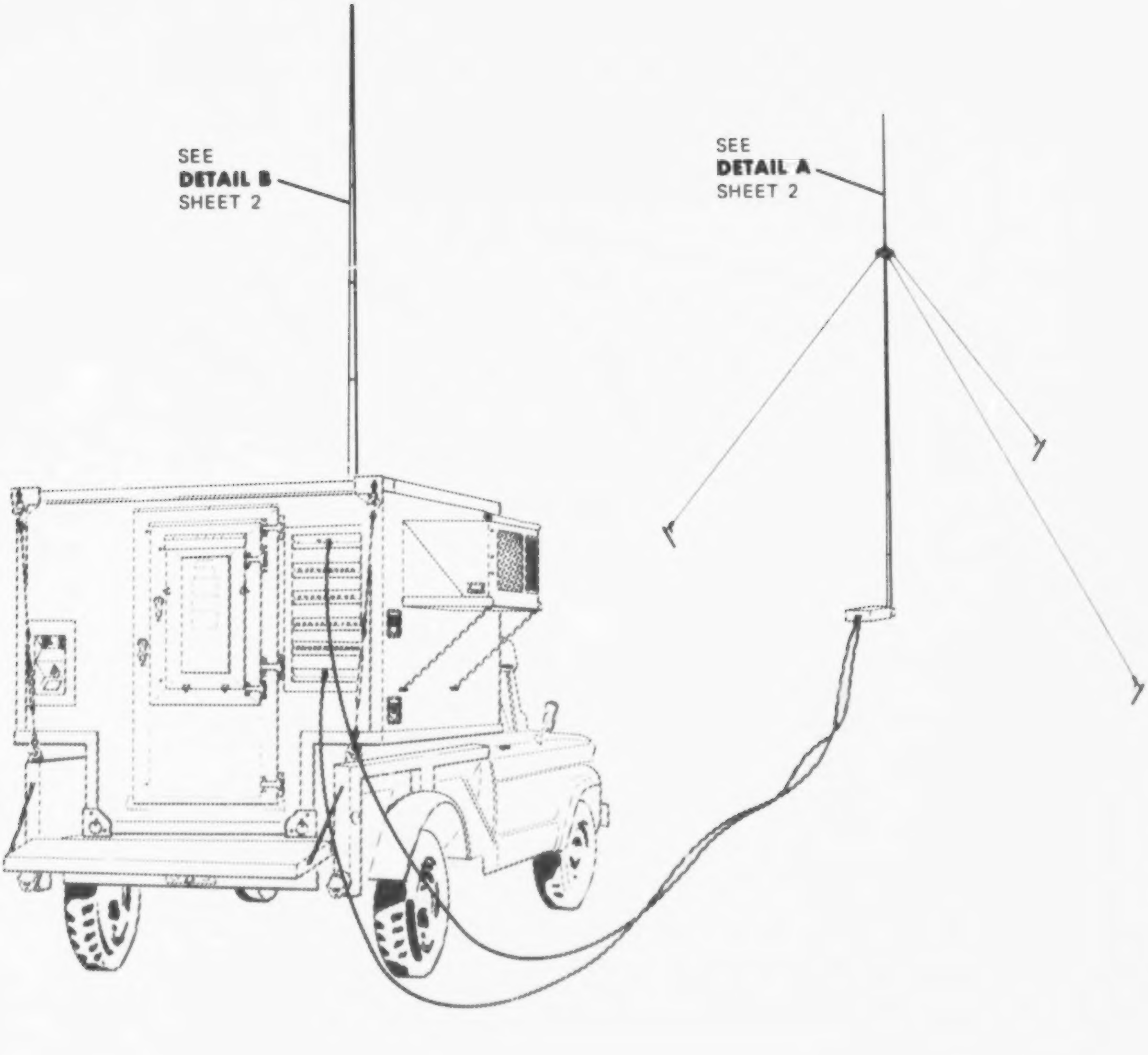


FRONT VIEW

B700 4103 Bx

Figure 6-3. Drawer Assembly

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
3	656-6953-001		DRAWER ASSEMBLY (SEE FIGURE 1 FOR NHA)	REF	
-1	2385-2-18	71279	. HANDLE,BOW 015-3478-020	1	
	MS51958-63	96906	. SCREW 343-0228-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
-2	656-6951-001		. PANEL, DRAWER	1	
	MS20426AD3-6	96906	. RIVET 305-1364-000 (AP)	8	
-3	16-10-201-11	94222	. FASTENER,PAWL 012-0047-010	2	
-4	656-6948-003		. LINER, DRAWER FRONT	1	
-5	656-6948-002		. LINER, DRAWER SIDE	2	
-6	656-6948-001		. LINER, DRAWER, BOTTOM	1	
-7	656-6948-004		. LINER, DRAWER, REAR	1	
	656-6952-001		. CHASSIS, DRAWER	1	
-8	FPN10-32SCL	83324	. . PRESS NUT CD PL STL, 10-32 334-1154-000	8	
-9	656-6952-002		. . CHASSIS	1	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DETAIL A
SHEET 2

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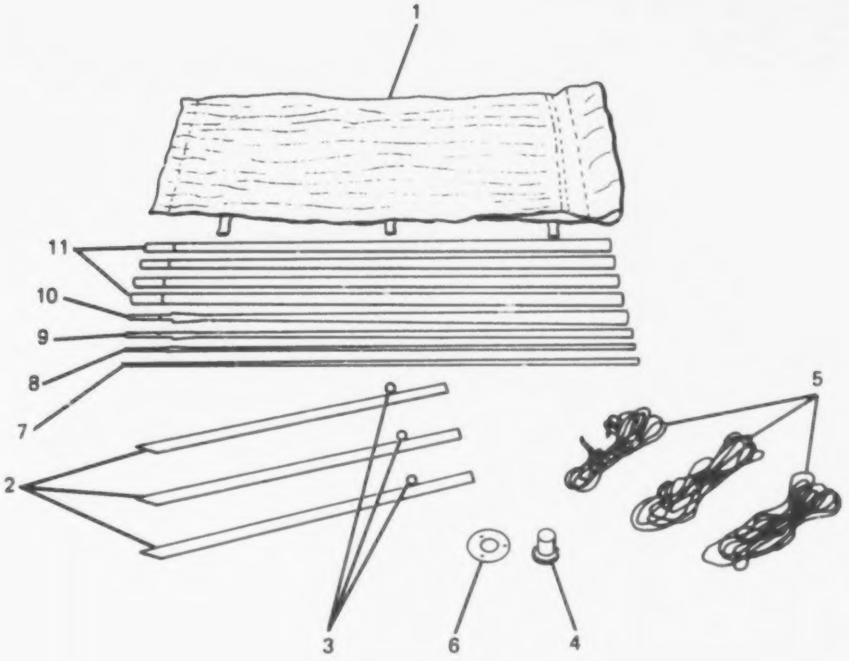
Figure 6-4. Receive and Transmit Antenna Assembly (Sheet 1 of 2)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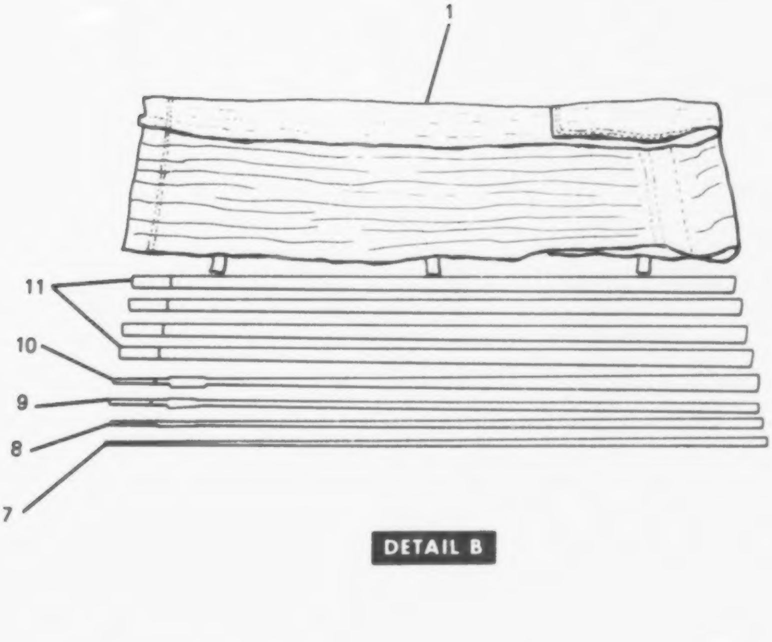

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Figure 6-4. Receive and Transmit Antenna Assembly (Sheet 2 of 2)

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
4	656-9044-001		ANTENNA ASSEMBLY, RECEIVE (SEE FIGURE 1 FOR NHA). .	REF	A
	656-8749-001		ANTENNA ASSEMBLY, TRANSMIT (SEE FIGURE 1 FOR NHA) .	REF	B
-1	547-1137-005		. BAG, ANTENNA.	2	
-2	793-5986-002		. STAKE	3	B
-3	21CAD	03914	. BOLT,EYE CP PL STL, 1/4-20 X 1INSFT 330-2760-000	3	B
	MS17830-4C	96906	. NUT 333-0428-000 (AP)	3	B
	310-0050-000	79807	. WASHER,FLAT SST, 0.265 ID X 0.625 OD (AP)	3	B
-4	547-1244-002		. INSULATOR	1	B
-5	015-1211-000	20370	. GUY	3	B
-6	547-1243-002		. PLATE, GUY.	1	B
	120-31	00414	. ANTENNA 013-1560-020.	2	
-7	75391		. . SECTION, TIP.	1	
-8	75361		. . SECTION	1	
-9	75431		. . SECTION	1	
-10	75371		. . SECTION	1	
-11	75381		. . SECTION, EXTENSION.	4	

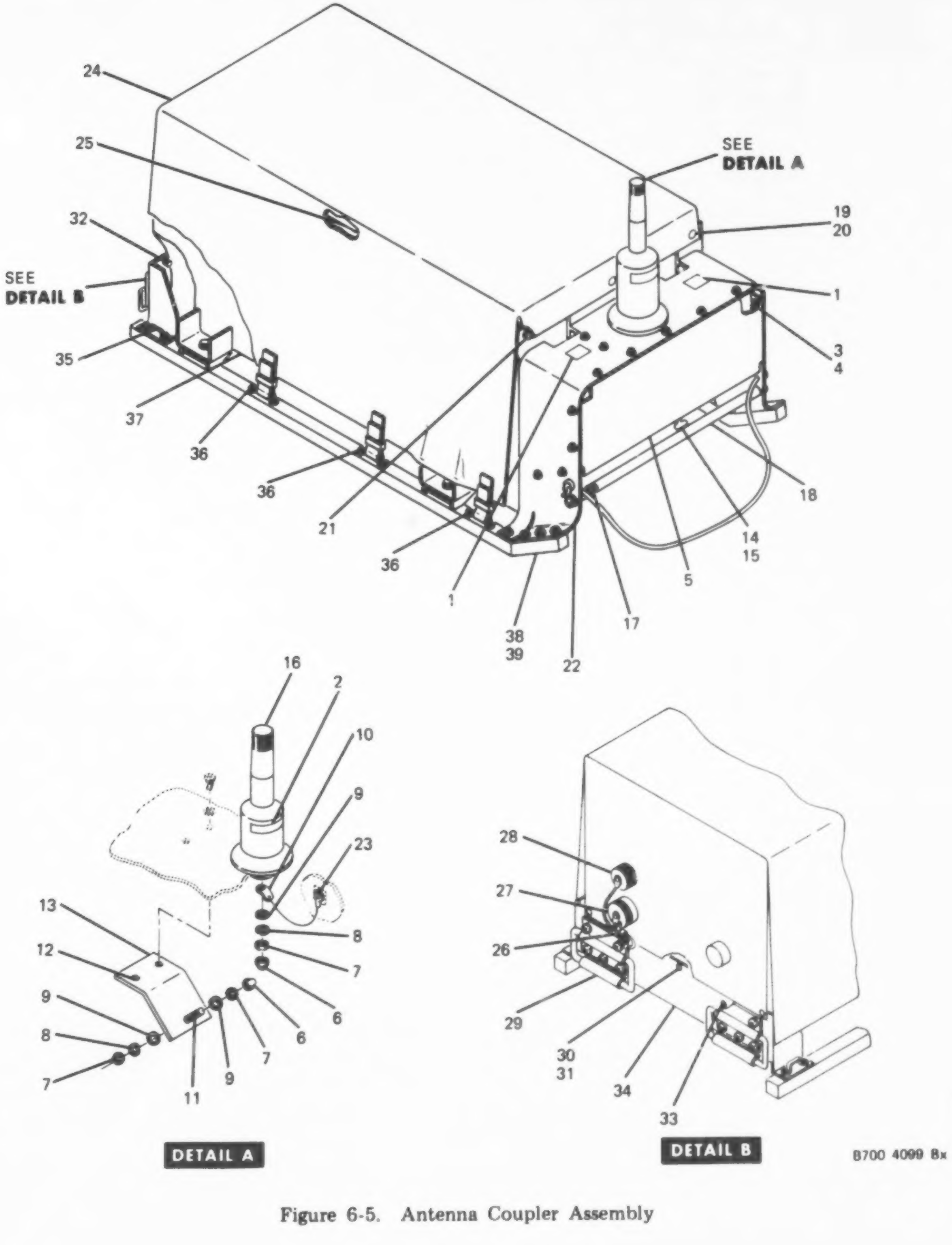
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Figure 6-5. Antenna Coupler Assembly

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5	656-6888-001		COUPLER ASSEMBLY, ANTENNA (SEE FIGURE 1 FOR NHA)	REF	
-1	280-1368-360	12998	. LABEL,PRESSURE SENS	2	
-2	656-7122-001		. LABEL, COUPLER	1	
	656-8702-001		. COVER, COUPLER END	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	8	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	8	
-3	MS20426AD3-4	96906	. . RIVET 305-1362-000	26	
-4	NAS1068A3	80205	. . NUT 333-0890-000	13	
-5	656-8702-002		. . COVER	1	
-6	MS24679-25	96906	. NUT 334-2717-150	2	
-7	P313-0082-000	77250	. NUT,PLAIN,HEX SST, 1/4-20 313-0082-000	3	
-8	MS35338-139	96906	. WASHER 310-0288-000	2	
-9	MS15795-810	96906	. WASHER 310-0779-100	3	
-10	MS25036-157	96906	. TERMINAL 304-1284-000	1	
-11	P312-0073-000	77250	. STUD,CONT THD BRS, 1/4-20 X 1-3/4 312-0073-000	1	
	656-8690-001		. BRACKET, SPARK GAP	1	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
-12	NAS1330S3B266	03481	. . NUT,BLIND RIVET CD PL STL, 10-32 334-2706-020	2	
-13	656-8690-002		. . BRACKET	1	
	656-9077-001		. SCREW, THUMB	2	
-14	334-1115-000	45722	. . NUT,PLAIN,WING BRS, 1/4-20	1	
-15	P312-0253-000	77250	. . STUD,CONT THD BRS, 1/4-20 X 3/4 312-0253-000	1	
-16	35-25-0013-00	23657	. BASE ASSY 013-1544-000	1	
	656-8688-001		. BAR, HANDLER	1	
	MS51957-83	96906	. SCREW 343-0269-000 (AP)	2	
	MS35338-139	96906	. WASHER 310-0288-000 (AP)	2	
	MS15795-810	96906	. WASHER 310-0779-100 (AP)	2	
-17	MS122121	96906	. . INSERT 012-1612-000	2	
-18	656-8688-002		. . BAR	1	
-19	MS51957-28	96906	. SCREW 343-0169-000	3	
-20	BS10370BLK	61864	. SOCKET,SNAP FAS 012-3211-000	3	
	656-8705-001		. COVER, COUPLER	1	
-21	M45938-4-6	81349	. . NUT 334-1477-000	3	
-22	656-8705-002		. . COVER	1	
-23	MS25036-114	96906	. TERMINAL 304-1286-000	1	
-24	656-8730-001		. CANVAS, COVER PROTECTIVE	1	
-25	656-8729-001		. PAD, COUPLER PROTECTIVE	1	
-26	LW1023-1-6-0	83014	. WIRE ROPE ASSY 432-1120-000	1	
	MS51958-62	96906	. SCREW 343-0227-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	1	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	1	
-27	MS3181-20N	96906	. COVER 371-8363-250	1	
-28	M39012-25-0011	81349	. COVER 357-9358-000	1	
-29	656-8718-001		. HANDLE, COUPLER	2	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	9	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	9	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	9	
-30	MS51957-26	96906	. SCREW 343-0167-000	3	
-31	BS10370BLK	61864	. SOCKET,SNAP FAS 012-3211-000	3	
	665-8691-001		. BRACKET, HANDLER MOUNTING	1	
-32	M45938-4-6	81349	. . NUT 334-1477-000	3	
-33	M45938-4-10	81349	. . NUT 334-1483-000	10	
-34	665-8691-002		. . BRACKET	1	
-35	662R1-1X1-4CDPL	76786	. LOOP,STRAP FSTN 015-1255-000	2	
	MS51960-65	96906	. SCREW 342-0224-000 (AP)	4	
-36	662R1-1X1-4CDPL	76786	. LOOP,STRAP FSTN 015-1255-000	6	
	MS51960-64	96906	. SCREW 342-0223-000 (AP)	12	
-37	622-3515-001		. COUPLER, ANTENNA	1	
-38	656-8722-001		. RAIL, COUPLER, RIGHT HAND	1	
	656-8722-002		. RAIL, COUPLER, LEFT HAND	1	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
5	MS35307-333	96906	. SCREW 326-2289-000 (AP)	2	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	2	
	MS17830-5C	96906	. NUT 333-0444-000 (AP)	2	
-39	NAS1330S3P166	03481	. . NUT,BLIND RIVET CD PL STL, 10-32 334-2706-010 .	12	

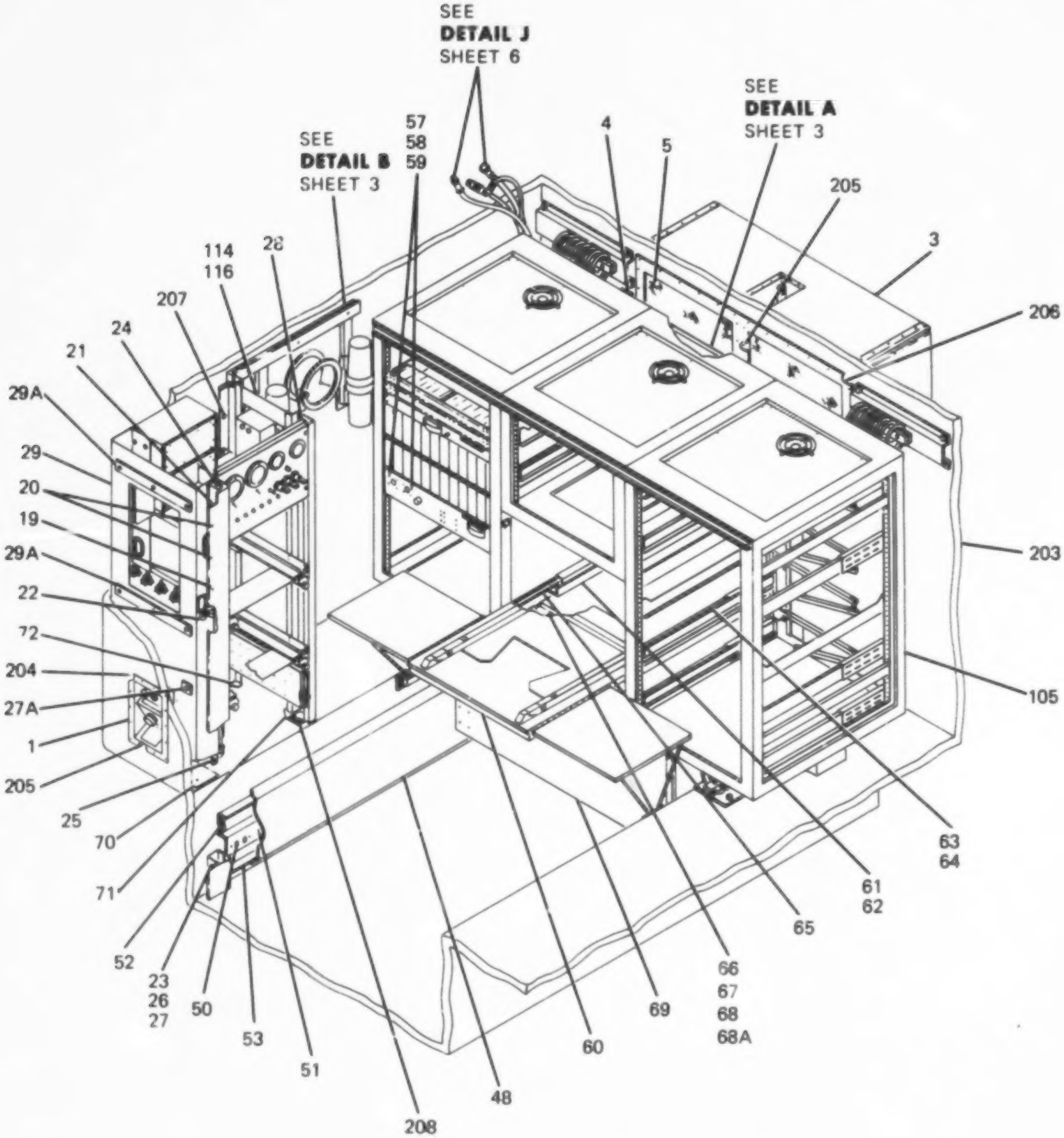
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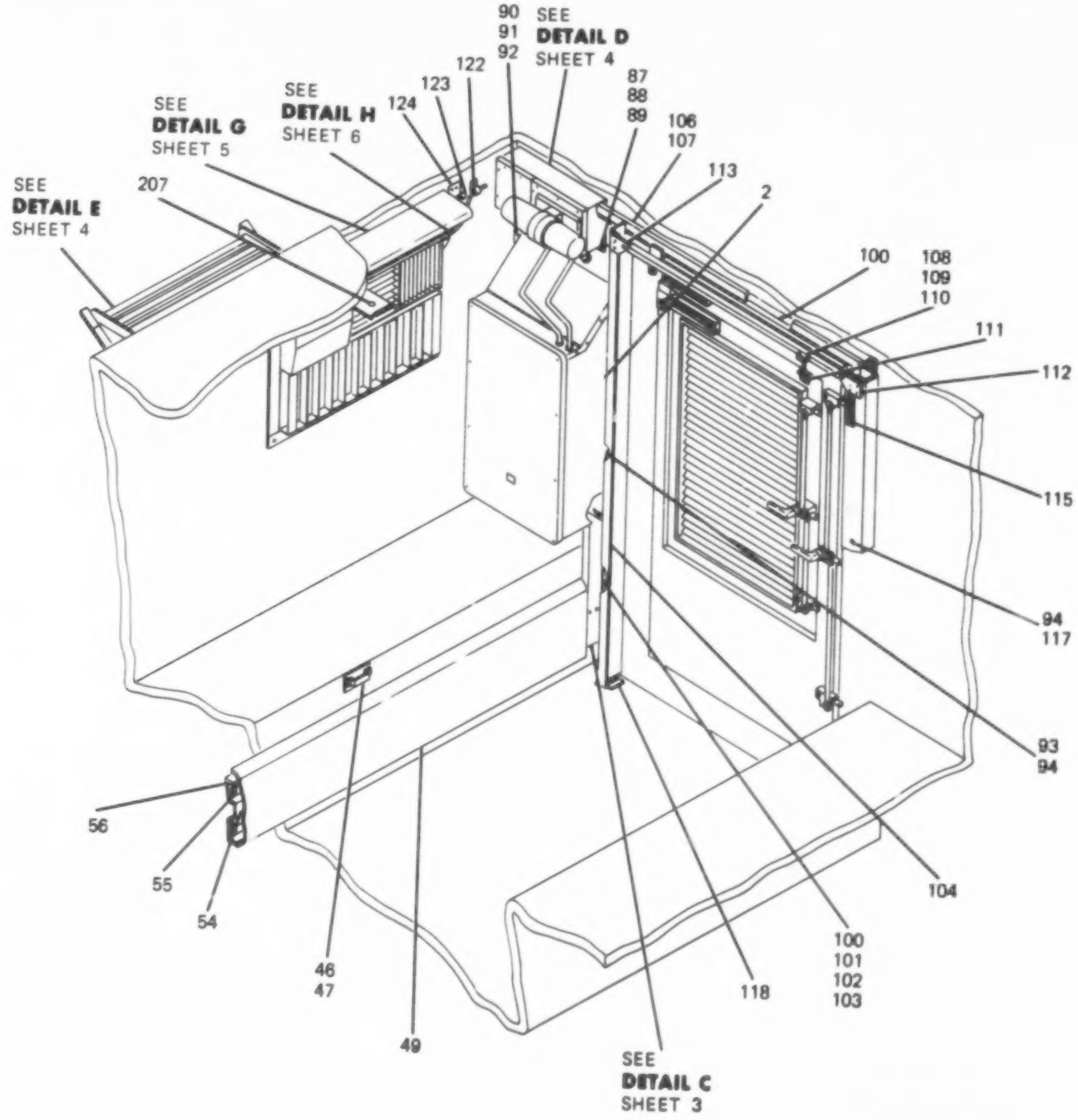
Figure 6-6. Shelter-Wired AN/TSC-60(V)7 (Sheet 1 of 6)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DETAIL H
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DETAIL E
SHEET 4
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SEE
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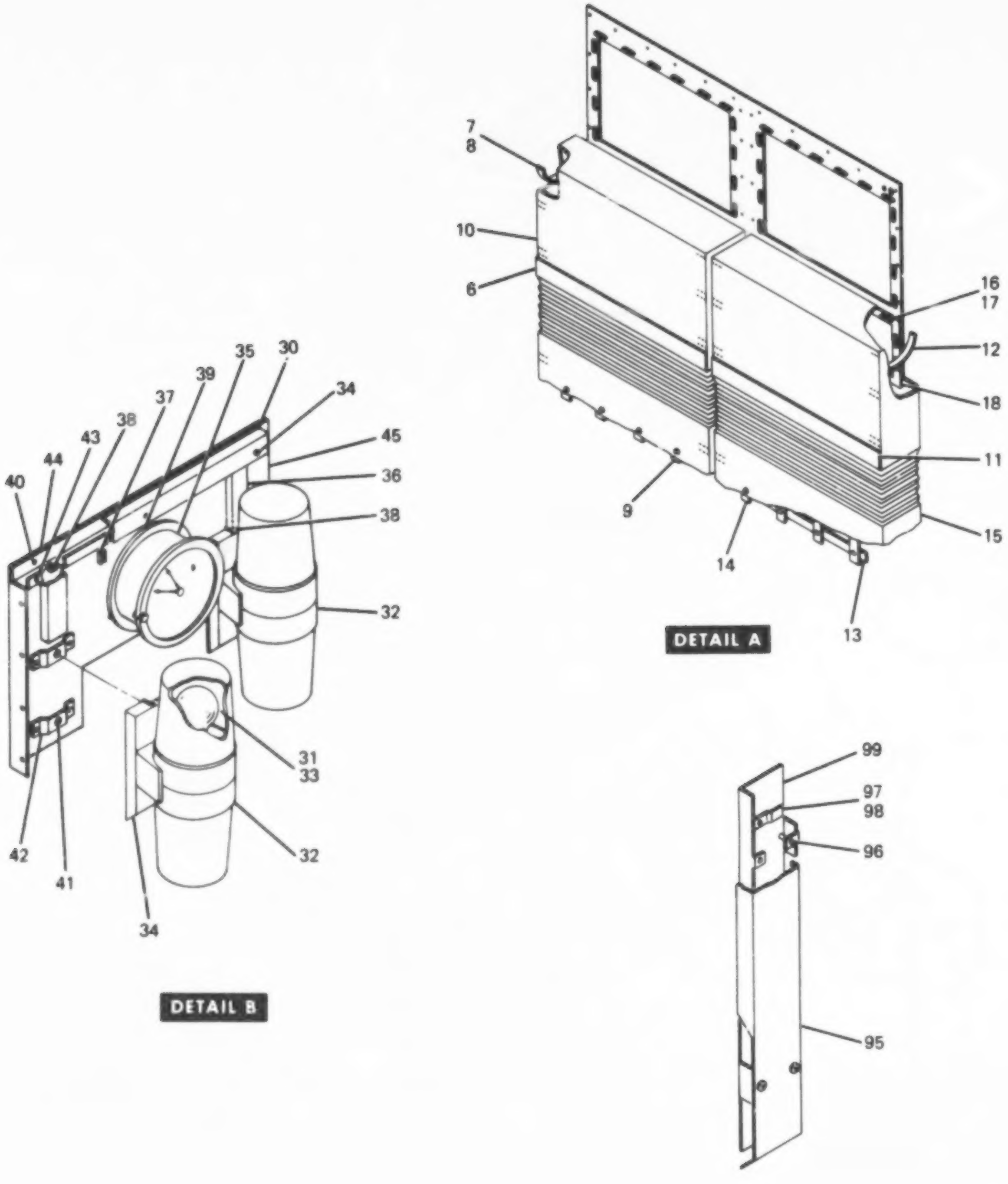
Figure 6-6. Shelter-Wired AN/TSC-60(V)7 (Sheet 2 of 6)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DETAIL A

DETAIL B

DETAIL C

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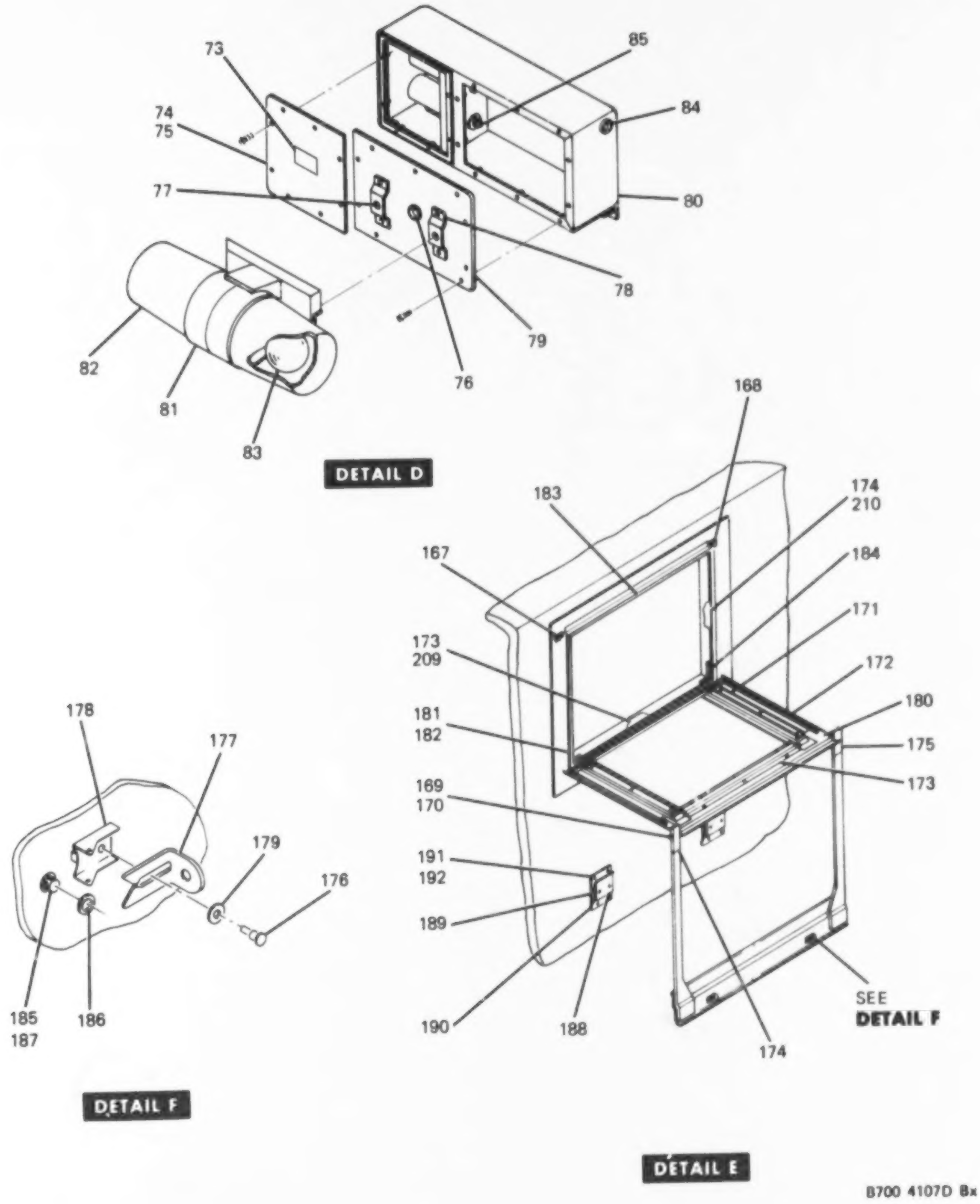
Figure 6-6. Shelter-Wired AN/TSC-60(V)7 (Sheet 3 of 6)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DETAIL D
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DETAIL F
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DETAIL F
DETAIL E
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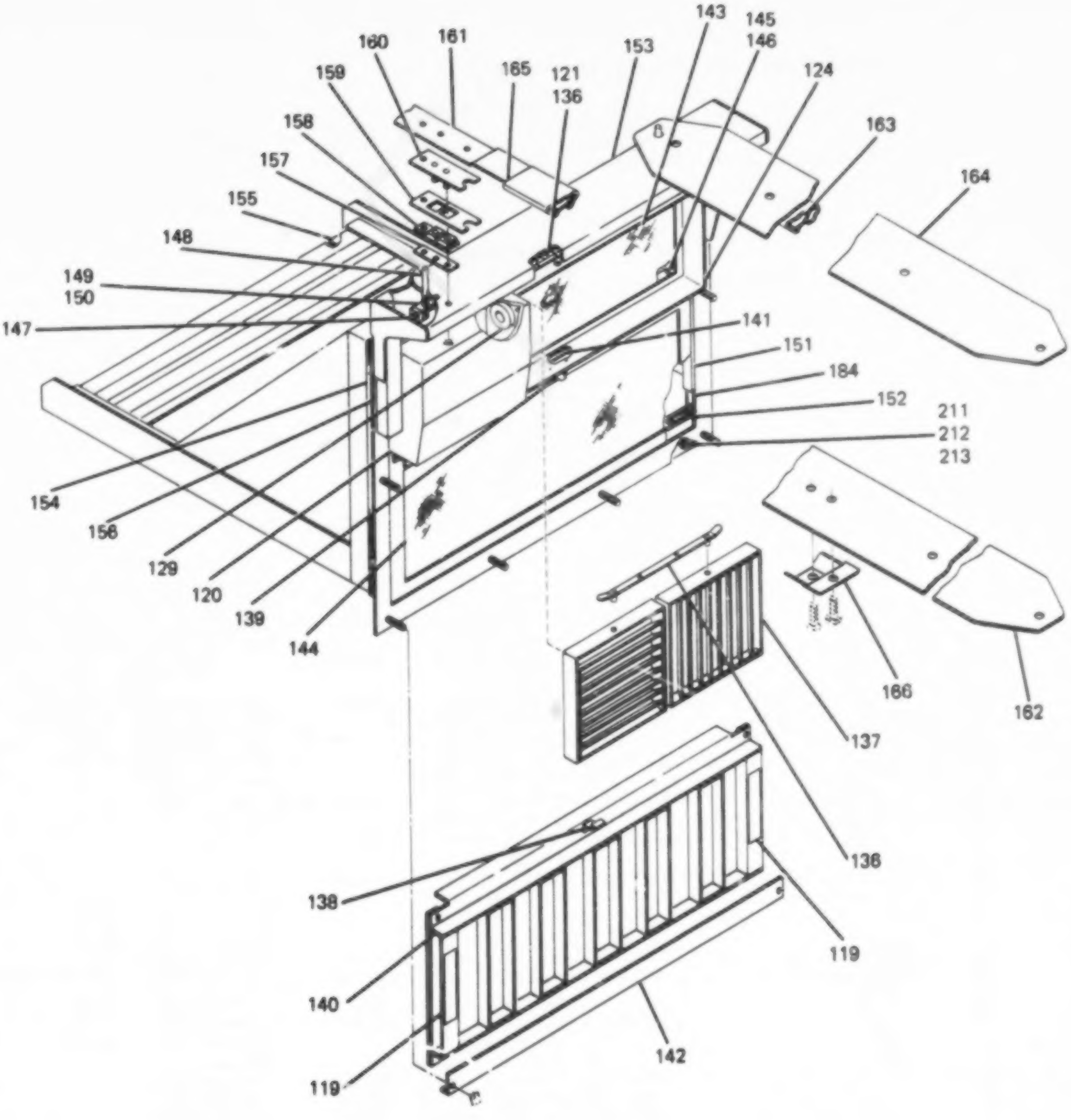
Figure 6-6. Shelter-Wired AN/TSC-60(V)7 (Sheet 4 of 6)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DETAIL G
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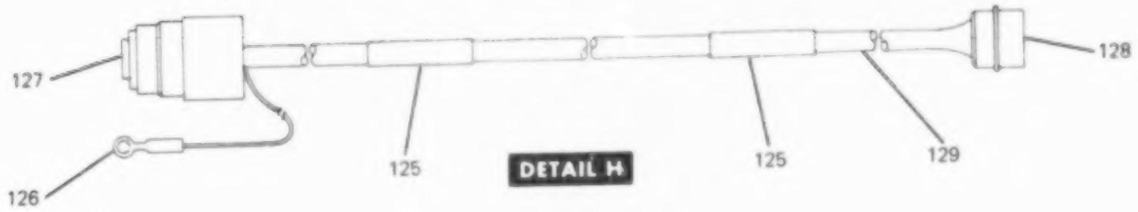
Figure 6-6. Shelter-Wired AN/TSC-60(V)7 (Sheet 5 of 6)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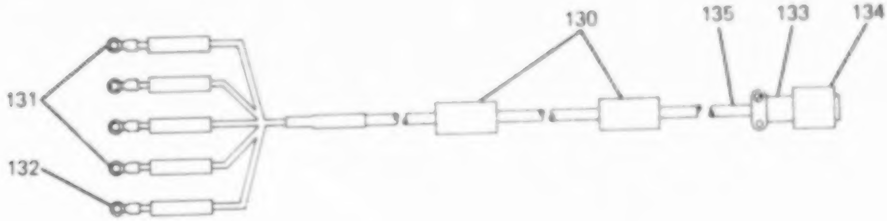
DETAIL H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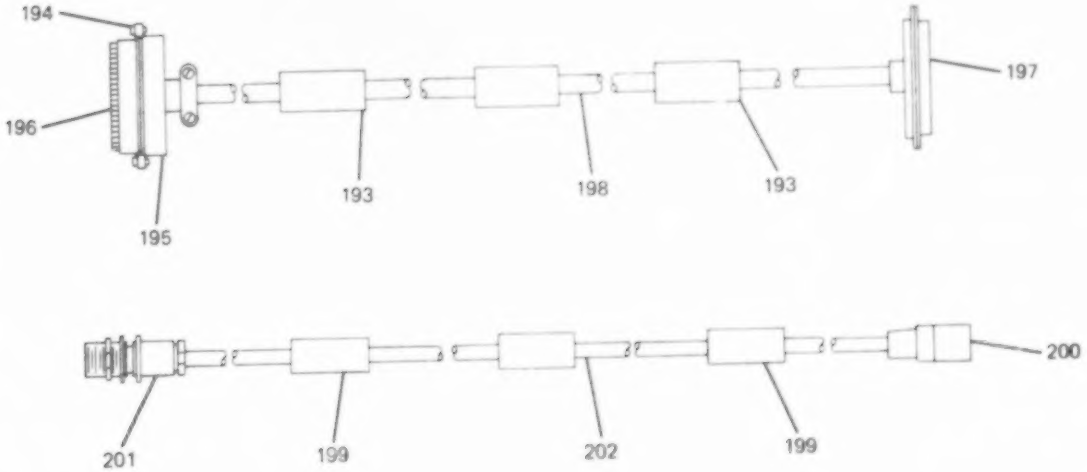
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DETAIL J

B700 4107F Bx

Figure 6-6. Shelter-Wired AN/TSC-60(V)7 (Sheet 6 of 6)

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
6	656-6900-001		SHELTER-WIRED AN/TSC-60(V)7 (SEE FIGURE 1 FOR NHA)	REF	
/1-1	656-7252-001		. PANEL ASSEMBLY, POWER ENTRY (SEE FIGURE 7 FOR BREAKDOWN)	1	
	MS51958-67	96906	. SCREW 343-0231-000 (AP)	14	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	14	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	14	
/2-2	656-6889-001		. PANEL ASSEMBLY, SIGNAL ENTRY (SEE FIGURE 8 FOR BREAKDOWN)	1	
	CR2163T6-4	11815	. RIVET,BLIND AL ALY, 0.187 DIA X 0.375 305-2094-130 (AP)	15	
	CR2163T6-5	11815	. RIVET,BLIND AL ALY, 0.187 DIA X 0.438 305-2094-190 (AP)	6	
	CR2163T6-6	11815	. RIVET,BLIND AL ALY, 0.187 DIA X 0.500 305-2094-200 (AP)	14	
/1-3	656-6887-001		. FAN ASSEMBLY, BLOWER (SEE FIGURE 9 FOR BREAKDOWN)	1	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	48	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	48	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	48	
/1-4	TY37	59730	. CLAMP,LOOP 435-1106-000	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	1	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	1	
/1-5	656-8701-001		. FRAME, HONEYCOMB.	2	
	P343-0194-000	77250	. SCREW,MACHINE SST, 8-32 X 1-1/8 343-0194-000 (AP)	18	
	MS51957-50	96906	. SCREW 343-0195-000 (AP)	16	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	48	
	656-7137-003		. DUCT, AIR-INTAKE.	1	
/1-6	V330-2-100-25YDS	83014	. . FASTENER,N TAPE 014-1331-020.	2	
/3-7	656-7137-004		. . SPRING, NYLON	6	
	AD66AH	07707	. . RIVET,BLIND AL, 0.187 DIA X 0.575 305-2060-250 (AP)	15	
	MS15795-807	96906	. . WASHER 310-0779-070 (AP).	15	
/3-8	656-7137-005		. . RIB, SHORT.	5	
/3-9	656-7137-011		. . SPRING, CENTER.	1	
/3-10	656-7137-009		. . FABIRC, TOP	1	
	656-7136-003		. DUCT, AIR-EXHAUST	1	
/3-11	V330-2-100-25YDS	83014	. . FASTENER,N TAPE 014-1331-020.	2	
/3-12	656-7136-004		. . SPRING, NYLON	6	
	AD66AH	07707	. . RIVET,BLIND AL, 0.187 DIA X 0.575 305-2060-250 (AP)	15	
	MS15795-807	96906	. . WASHER 310-0779-070 (AP).	15	
/3-13	656-7136-005		. . RIB, NYLON.	5	
/3-14	656-7136-010		. . SPRING, CENTER.	1	
/3-15	656-7136-009		. . FABRIC, TOP	1	
	656-7138-001		. PLATE, NUT-AIR DUCT	2	
	MS51959-45	96906	. SCREW 342-0080-000 (AP)	12	
/3-16	NAS1068A08	80205	. . NUT 333-0889-000.	16	
/3-17	MS20426AD3-5	96906	. . RIVET 305-1363-000 (AP)	32	
/3-18	656-7138-002		. . PLATE, BASIC.	1	
	656-7238-001		. COVER, CHANNEL.	1	
	MS51958-62	96906	. SCREW 343-0227-000 (AP)	5	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	5	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	5	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	10	
/1-19	NAS1329H08B75	80205	. . NUT 334-2720-530.	1	
/1-20	S10B116	03481	. NUT,BLIND RIVET CD PL STL, 10-32 334-2716-670	2	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
6 /1-21	656-7238-002		. . COVER	1	
/1-22	MS25281R9	96906	. CLAMP 150-0708-080.	3	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	3	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	3	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	3	
	656-7239-001		. CHANNEL, DUCT-CABLE	1	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	6	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	6	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	6	
/1-23	MS21266-2N	96906	. . PLASTIC CHANNEL 150-0175-000.	AR	
/1-24	S10B116	03481	. . NUT,BLIND RIVET CD PL STL, 10-32 334-2716-670	5	
/1-25	FPN10-32SCL	83324	. . PRESS NUT CD PL STL, 10-32 334-1154-000	5	
/1-26	656-7239-002		. . CHANNEL	1	
/1-27	656-7240-001		. SHIM, CHANNEL	1	
/1-27A	656-7024-001		. SHIM, PANEL MOUNTING.	2	
	MS35307-336	96906	. SCREW 326-2292-000 (AP)	3	
	MS35338-140	96906	. WASHER 310-0290-000 (AP).	3	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	3	
/1-28	656-7030-001		. BRACKET, CLOSURE.	1	
	MS51957-27	96906	. SCREW 343-0168-000 (AP)	2	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
/1-29	656-6884-001		. RACK ASSEMBLY, POWER SECURE (SEE FIGURE 10 FOR BREAKDOWN)	1	
	MS35307-336	96906	. SCREW 326-2292-000 (AP)	9	
	MS35338-140	96906	. WASHER 310-0290-000 (AP).	9	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	9	
	AN104612	88044	. BOLT 326-2609-050 (AP).	20	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	20	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	20	
-29A	656-7023-001		. SHIM, PANEL MOUNTING.	2	
	MS35307-336	96906	. SCREW 326-2292-000 (AP)	6	
	MS35338-140	96906	. WASHER 310-0290-000 (AP).	6	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	6	
/3-30	656-7258-001		. COVER, LIGHT AND CLOCK CABLE.	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	3	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	3	
/3-31	60A193	08805	. LAMP,INCANDESCENT 262-0630-090.	1	
/3-32	656-1033-001		. CLAMP, HOSE (ALTERED FROM 013-1309-080)	4	
/3-33	W-L-101/85	24455	. LAMP,INCANDESCENT 262-2143-000.	3	
/3-34	656-7262-001		. LIGHT FIXTURE, MODIFIED (ALTERED FROM 262-1844-010)	2	
	MS90726-57	96906	. SCREW 326-0165-000 (AP)	4	
	CRES-.390IDX.875 ODX.060TH	79807	. WASHER,FLAT CRES, 0.390IDX0.875ODX0.060TH 310-0052-000 (AP)	4	
/3-35	20390FH	11755	. CLOCK, 8-DAY.	1	
	MS21044C08	96906	. NUT 333-1301-000 (AP)	3	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	3	
/3-36	656-7257-001		. COVER, LIGHT CABLE.	2	
	MS21044C06	96906	. NUT 333-1300-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
	656-7256-001		. BASE, CLOCK AND LIGHT	1	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	4	
	MS35307-335	96906	. SCREW 326-2291-000 (AP)	3	
	MS35338-140	96906	. WASHER 310-0290-000 (AP).	3	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	4	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	3	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	4	
/3-37	100-200-4-6	99378	. . CLIP,SPR TNSN 139-2214-000.	1	
	MS20470AD3-4	96906	. . RIVET 305-1155-000 (AP)	2	
/3-38	MS21266-2N	96906	. . PLASTIC CHANNEL 150-0175-000.	AR	
/3-39	FHS832-10	46384	. . STUD,SELF-CLINCHING SST, 8-32 X 5/8 330-2803-000	3	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
6 /3-40	MS20426AD4-6	96906	. . RIVET 305-1375-000	3	
	656-7248-001		. . BRACKET, LIGHT FIXTURE	4	
	MS20426AD5-6	96906	. . RIVET 305-1392-000 (AP)	8	
/3-41	M45938-3-12C	81349	. . . NUT 334-2701-160	1	
/3-42	656-7248-002		. . . BRACKET	1	
/3-43	S10B116	03481	. . NUT,BLIND RIVET CD PL STL, 10-32 334-2716-670	3	
/3-44	656-7256-002		. . CHANNEL	1	
/3-45	656-7256-003		. . BASE	1	
/2-46	MS21266-3N	96906	. PLASTIC CHANNEL 150-0177-000	AR	
/2-47	656-6919-001		. HOLDER, SUPPORT	2	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	4	
/1-48	656-7204-001		. COVER, DUCT CABLE	1	
	MS51957-28	96906	. SCREW 343-0169-000 (AP)	4	
	MS15795-805	96906	. WASHER 310-0779-050 (AP)	4	
/2-49	656-7204-002		. COVER, DUCT CABLE	1	
	MS51957-28	96906	. SCREW 343-0169-000 (AP)	4	
	MS15795-805	96906	. WASHER 310-0779-050 (AP)	4	
/1-50	5252	74545	. CONNECTOR,RCPT ELEC 368-0139-000	1	
	P343-0064-000	77250	. SCREW,MACH NI PL BRS, 1/4-28 X 1-1/2 343-0064-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP)	2	
	656-7205-001		. CHANNEL, DUCT-CABLE	1	
	MS51958-66	96906	. SCREW 343-0230-000 (AP)	8	
	MS35338-138	96905	. WASHER 310-0284-000 (AP)	8	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	8	
/1-51	FPN6-32SCL	83324	. . PRESS NUT CD PL STL, 6-32 334-1152-000	4	
	656-7173-001		. . BAR, TIE CABLE	14	
	MS20426AD4-4	96906	. . RIVET 305-1373-000 (AP)	14	
/1-52	656-7173-002		. . . BAR	1	
/1-53	656-7205-003		. . CHANNEL	1	
	656-7205-002		. CHANNEL, DUCT-CABLE	1	
	MS51958-66	96906	. SCREW 343-0230-000 (AP)	8	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	8	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	8	
/2-54	FPN6-32SCL	83324	. . PRESS NUT CD PL STL, 6-32 334-1152-000	4	
	656-7173-001		. . BAR, TIE CABLE	14	
	MS20426AD4-4	96906	. . RIVET 305-1373-000 (AP)	14	
/2-55	656-7173-002		. . . BAR	1	
/2-56	656-7205-004		. . CHANNEL	1	
/1-57	MS51959-15	96906	. SCREW 342-0046-000	8	
/1-58	MS15795-803	96906	. WASHER 310-0779-030	8	
/1-59	MS21044C04	96906	. NUT 333-1299-000	8	
/1-60	656-9050-001		. SHELF, TTY MOUNTING/WRITING (SEE FIGURE 17 FOR BREAKDOWN)	1	
/1-61	B-200-18	06666	. SLIDE, PAIR	1	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	8	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	24	
	MS35650-304	96906	. NUT 313-0019-000 (AP)	8	
	656-7201-001		. MOUNT, SLIDE-LEFT	1	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	8	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	4	
	MS35650-304	96906	. NUT 313-0019-000 (AP)	4	
/1-62	MS21266-3N	96906	. . PLASTIC CHANNEL 150-0177-000	AR	
/1-63	656-7201-003		. . MOUNT	1	
	656-7201-002		. MOUNT, SLIDE-RIGHT	1	
/1-64	MS21266-3N	96906	. . PLASTIC CHANNEL 150-0177-000	1	
/1-65	656-7201-004		. . MOUNT	1	
	656-6894-001		. PANEL ASSEMBLY, RADIO PATCH		
/1-66	M39012-25-0011	81349	. . COVER 357-9358-000	1	
	MS51957-15	96906	. . SCREW 343-0135-000 (AP)	1	

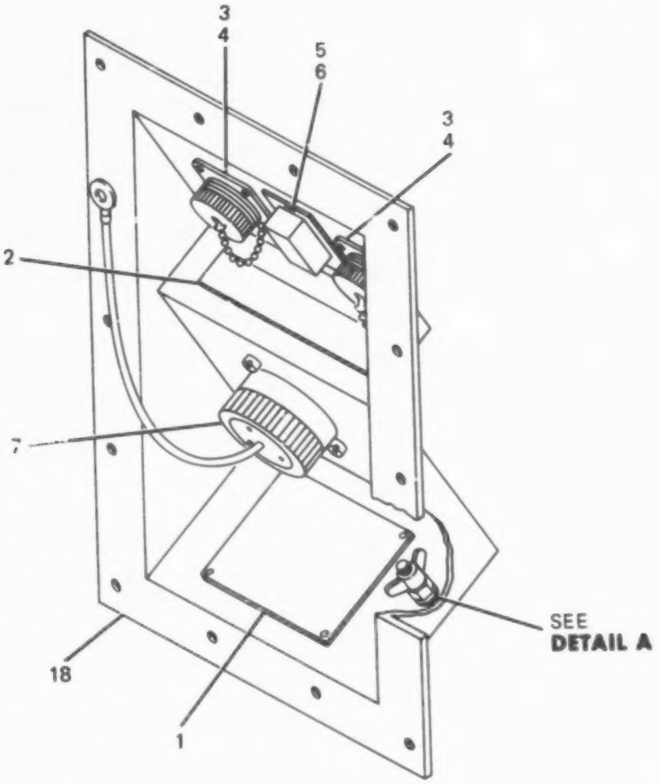
FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
6	MS21044C04	96906	. . NUT 333-1299-000 (AP)	1	
	MS15795-803	96906	. . WASHER 310-0779-030 (AP).	2	
/1-67	M24308/26-1	81349	. . SCREW 371-0062-000.	2	
/1-68	MS21266-3N	96906	. . PLASTIC CHANNEL 150-0177-000.	AR	
/1-68A	656-7149-001		. . PANEL, RADIO PATCH.	1	
/1-69	656-6891-001		. ENCLOSURE ASSEMBLY, PA AND POWER SUPPLY (SEE FIGURE 18 FOR BREAKDOWN)	1	
	MS51958-81	96906	. SCREW 343-0837-000 (AP)	18	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	18	
/1-70	656-7166-001		. SPACER, FRAME- BOTTOM	1	
	MS35307-337	96906	. SCREW 326-2293-000 (AP)	3	
	MS35338-140	96906	. WASHER 310-0290-000 (AP).	3	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	3	
/1-71	656-7052-002		. PLATE, FRAME SUPPORT-FRONT.	1	
	MS35307-337	96906	. SCREW 326-2293-000 (AP)	2	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	2	
	MS35338-140	96906	. WASHER 310-0290-000 (AP).	2	
/1-72	656-7052-001		. PLATE, FRAME SUPPORT-REAR	1	
	MS35307-337	96906	. SCREW 326-2293-000 (AP)	2	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	2	
	MS35338-140	96906	. WASHER 310-0290-000 (AP).	2	
/4-73	280-1368-060	12998	. LABEL,PRESSURE SENS	1	
/4-74	656-7233-001		. COVER, FRONT FILTER HOUSING	1	
	MS51957-46	96906	. SCREW 343-0190-000 (AP)	8	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	8	
/4-75	656-3402-001		. LABEL, CAUTION.	1	
/4-76	MS35489-48	96906	. GROMMET 201-0027-000.	1	
	656-7248-001		. BRACKET, LIGHT FIXTURE.	2	
	MS51957-46	96906	. SCREW 343-0190-000 (AP)	4	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	8	
	MS21044C08	96906	. NUT 333-1301-000 (AP)	4	
/4-77	M45938-3-12C	81349	. . NUT 334-2701-160.	1	
/4-78	656-7248-002		. . BRACKET	1	
/4-79	656-7234-001		. COVER, FILTER HOUSING	1	
	MS51957-46	96906	. SCREW 343-0190-000 (AP)	10	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	10	
/4-80	656-7232-001		. FILTER, HOUSING	1	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	2	
/4-81	656-1033-001		. CLAMP, HOSE (ALTERED FROM 013-1309-080)	2	
/4-82	H2411-2AL	17244	. FIXTURE,LIGHTING 262-1844-010	1	
	MS90726-57	96906	. SCREW 326-0165-000 (AP)	2	
	CRES-.390IDX.875 ODX.060TH	79807	. WASHER,FLAT CRES, 0.390 ID X 0.875 OD 310-0052-000 (AP)	2	
/4-83	W-L-101/85	24455	. LAMP,INCANDESCENT 262-2143-000.	2	
/4-84	MS21266-2N	96906	. PLASTIC CHANNEL 150-0175-000.	AR	
/4-85	M15733-02-0004	81349	. FILTER 241-0722-040	4	
/2-86	MS51958-65	96906	. SCREW 343-0003-000.	4	
/2-87	MS35338-138	96906	. WASHER 310-0284-000	4	
/2-88	MS15795-808	96906	. WASHER 310-0779-080	4	
/2-89	3302	59730	. CLAMP,ELEC 019-0099-000	1	
/2-90	MS51958-64	96906	. SCREW 343-0229-000.	10	
/2-91	MS35338-138	96906	. WASHER 310-0284-000	10	
/2-92	MS15795-808	96906	. WASHER 310-0779-080	10	
/2-93	BS10370BLK	61864	. SOCKET,SNAP FAS 012-3211-000.	1	
/3-94	MS51959-45	96906	. SCREW 342-0080-000.	2	
/3-95	656-8719-001		. COVER, CABLE TRAY	1	
	MS51958-63	96906	. SCREW 343-0228-000 (AP)	6	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
6	MS35338-138	96906	. WASHER 310-0284-000 (AP)	6	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	6	
	656-8721-001		. TRAY, CABLE, SIGNAL	1	
	MS51958-66	96906	. SCREW 343-0230-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
/3-96	S10B116	03481	. . NUT,BLIND RIVET CD PL STL, 10-32 334-2716-670	6	
/3-97	MS20426AD4-4	96906	. . RIVET 305-1373-000	4	
	656-7173-001		. . BAR, CABLE TIE	1	
/3-98	656-7173-002		. . . BAR	1	
/3-99	656-8721-002		. . TRAY	1	
	656-8724-001		. BRACKET, BLACKOUT	1	
	MS35307-334	96906	. SCREW 326-2290-000 (AP)	2	
	MS35338-140	96906	. WASHER 310-0290-000 (AP)	2	
	MS15795-812	96906	. WASHER 310-0779-120 (AP)	2	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	6	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	6	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	6	
/2-100	S10B116	03481	. . NUT,BLIND RIVET CD PL STL, 10-32 334-2716-670	2	
/2-101	M45938-4-7	81349	. . NUT 334-1478-000	4	
/2-102	NAS1329H08B75	80205	. . NUT 334-2720-530	1	
/2-103	656-8724-002		. . BRACKET	1	
/2-104	V330-2-100-25YDS	83014	. FASTENER,H TAPE 014-1331-020	1	
/1-105	656-6890-001		. RACK ASSEMBLY, THREE BAY (SEE FIGURE 12 FOR BREAKDOWN)	1	
	MS16998-45	96906	. SCREW 324-1507-000 (AP)	24	
	MS35338-139	96906	. WASHER 310-0288-000 (AP)	24	
/2-106	656-7250-001		. COVER, FILTER CABLE	1	
/2-107	656-7251-001		. COVER	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	8	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	8	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	8	
/2-108	126-5178-001		. SWITCH, BLACKOUT	1	
/2-109	AN3167-1	88044	. ADAPTER 266-6786-010	1	
/2-110	656-9059-001		. BRACKET, SUPPORT- BLACKOUT SWITCH	1	
/2-111	656-9061-001		. BRACKET, TRIP- BLACKOUT SWITCH	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
	656-8723-001		. HANGER, BLACKOUT CURTAIN	1	
	MS51958-67	96906	. SCREW 343-0231-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
/2-112	656-8723-004		. . SPACER	1	
/2-113	656-8723-002		. . SUPPORT, HANGER	1	
/1-114	X-129(BUNA-S)	70485	. RUBBER CHANNEL 200-2425-010	AR	
/2-115	V330-2-100-25YDS	83014	. FASTENER,H TAPE 014-1331-020	1	
/1-116	656-7037-001		. ANGLE, FRAME ATTACHMENT	2	
	MS35307-336	96906	. SCREW 326-2292-000 (AP)	4	
	MS15795-812	96906	. WASHER 310-0779-120 (AP)	4	
	MS15795-810	96906	. WASHER 310-0779-100 (AP)	8	
	MS35338-140	96906	. WASHER 310-0290-000 (AP)	4	
	MS21044C4	96906	. NUT 333-1303-000 (AP)	4	
/2-117	BS10370BLK	61864	. SOCKET,SNAP FAS 012-3211-000	1	
	MS51959-45	96906	. SCREW 342-0080-000 (AP)	1	
/2-118	656-8727-001		. PAD, GROUNDING ROD STOWAGE	1	
/5-119	656-3402-001		. LABEL, CAUTION	2	
/5-120	656-7068-001		. DOOR, FRONT-AIR CONDITION	1	
	MS51959-14	96906	. SCREW 342-0045-000 (AP)	12	
/5-121	521-CDC	30817	. STRIP,SHIELDING 018-0263-010	AR	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
6 /2-122	MS25281R8	96906	. CLAMP 150-0708-070.	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	1	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	1	
	656-7075-001		. HANGER, AIR CONDITIONER	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	2	
/2-123	MS21266-1N	96906	. . PLASTIC CHANNEL 150-0173-000.	AR	
/5-124	656-7075-002		. . HANGER.	1	
	656-8734-001		. CABLE ASSEMBLY, ECU POWER W305.	1	
/6-125	152-0077-040	85480	. . LABEL,CA MKR.	2	
/6-126	MS25036-157	96906	. . TERMINAL 304-1284-000	1	
/6-127	MS3106R18-11S	96906	. . CONNECTOR 357-4530-180.	1	
/6-128	MS27508E16F6P	96906	. . CONNECTOR 359-0654-200.	1	
/6-129	59-216	57003	. GASKET,EMI/RFI 018-0254-030	1	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	4	
	MS15795-803	96906	. WASHER 310-0779-030 (AP).	4	
	NAS620C4	80205	. WASHER 310-0740-240 (AP).	4	
	MS21044C04	96906	. NUT 333-1299-000 (AP)	4	
	656-8751-001		. CABLE ASSEMLBY, ECU POWER W023.	1	
/6-130	152-0077-020	85480	. . LABEL,CA MKR.	2	
/6-131	MS25036-112	96906	. . TERMINAL 304-1282-000	4	
/6-132	MS25036-157	96906	. . TERMINAL 304-1284-000	1	
/6-133	MS27506F16-2	96906	. . ADAPTER 359-0637-050.	1	
/6-134	MS27484T16F6S	96906	. . CONNECTOR 359-0645-270.	1	
/6-135	NW512SJ	04569	. . CABLE,SP,ELEC 424-0238-400.	AR	
/5-136	656-7053-001		. VENT, RETAINER.	1	
	MS51959-14	96906	. SCREW 342-0045-000 (AP)	2	
	MS15795-803	96906	. WASHER 310-0779-030 (AP).	2	
	MS35338-135	96906	. WASHER 310-0279-000 (AP).	2	
	MS35649-244	96906	. NUT 313-0043-000 (AP)	2	
/5-137	656-7038-001		. VENT, AIR CONDITIONER	2	
/5-138	656-9074-001		. LATCH, A/C CONTROL.	1	
	MS51959-29	96906	. SCREW 342-0063-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
	MS21044C06	96906	. NUT 333-1300-000 (AP)	2	
/5-139	656-9075-001		. BRACE, LATCH.	1	
	MS51959-29	96906	. SCREW 342-0063-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
	MS21044C06	96906	. NUT 333-1300-000 (AP)	2	
/5-140	656-7049-001		. GUARD, LOWER AIR CONDITIONER.	1	
	MS24680-25	96906	. NUT 334-2717-510 (AP)	6	
	MS35338-139	96906	. WASHER 310-0288-000 (AP).	6	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	6	
/5-141	656-8720-001		. PAD, VENT-AIR CONDITIONER	1	
/5-142	656-7044-001		. CLAMP, GUARD.	1	
/5-143	656-7060-001		. FRAME, NO. 21 HONEYCOMB	1	
	MS51957-48	96906	. SCREW 343-0192-000 (AP)	16	
	MS35338-137	96906	. WASHER 310-0072-000 (AP).	16	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	16	
/5-144	656-7061-001		. FRAME, NO. 23 HONEYCOMB	1	
	MS51959-26	96906	. SCREW 342-0060-000 (AP)	12	
	656-7048-001		. CHANNEL, SUPPORT.	1	
/5-145	NCN6-1-3	07886	. . NUT,CAPTIVE SST, 6-32 334-0427-000.	12	
/5-146	656-7048-002		. . CHANNEL	1	
/5-147	CL-70-SBP-2	99862	. BALL PLUNGER 015-4036-010	2	
/5-148	656-7196-001		. PIN	2	
	LC051G7SS	84830	. SPRING,HLCL,CMPRSN 340-1077-400 (AP).	2	
	7100-31-SS2	97464	. RING,RETAINING 340-0316-010 (AP).	2	
	656-7230-001		. FRAME ASSEMBLY, AIR CONDITIONER	1	
	MS17830-6C	96906	. NUT 333-0445-000 (AP)	2	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
6	CRES-.390IDX.875 ODX.060TH	79807	. WASHER,FLAT CRES, 0.390 ID X 0.875 OD 310-0052-000 (AP)	2	
/5-149	656-7195-002		. . BRACKET, LOCKING A/C, LEFT.	1	
	MS51959-26	96906	. . SCREW 342-0060-000 (AP)	3	
/5-150	656-7195-001		. . BRACKET, LOCKING A/C, RIGHT	1	
	MS51959-26	96906	. . SCREW 342-0060-000 (AP)	3	
/5-151	656-7241-001		. . SEALER, RUBBER, HORIZONTAL.	2	
/5-152	656-7241-002		. . SEALER, RUBBER, VERTICAL.	2	
/5-153	656-7202-001		. . BRACKET, CEILING -AIR CONDITIONER	1	
	MS51959-40	96906	. . SCREW 342-0075-000 (AP)	6	
	MS51959-81	96906	. . SCREW 342-0260-000 (AP)	8	
/5-154	515-CDC	30817	. . SHIELDING, RFI-EMI 018-0263-020	AR	
/5-155	656-7272-001		. . SHIM, A/C FRAME	10	
	MS51959-31	96906	. . SCREW 342-0065-000 (AP)	4	
	MS15795-805	96906	. . WASHER 310-0779-050 (AP).	4	
	MS21044C06	96906	. . NUT 333-1300-000 (AP)	4	
/5-156	656-6992-001		. . SUPPORT, A/C.	1	
/5-157	656-7207-001		. SHIM, SLIDE, A/C.	6	
/5-158	656-7179-001		. SPACER, SLIDE, A/C.	2	
/5-159	656-7184-001		. SLIDE, PLASTIC, A/C	2	
/5-160	656-7182-001		. MOUNT, SLIDE, A/C	2	
/5-161	656-8715-001		. STRIP, LEFT	1	
/5-162	656-8713-001		. PLATE, A/C SLIDE LEFT	1	
/5-163	656-8716-001		. STRIP, RIGHT.	1	
/5-164	656-8714-001		. PLATE, A/C SLIDE RIGHT.	1	
/5-165	656-8745-001		. SLIDE, A/C.	2	
	MS24693S122	96906	. SCREW 342-1365-550 (AP)	8	
/5-166	656-7148-001		. STOP, CHANNEL	2	
	MS35307-337	96906	. SCREW 326-2293-000 (AP)	1	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	1	
/4-167	656-7264-001		. LATCH, A/C LEFT	1	
	MS51960-68	96906	. SCREW 342-0227-000 (AP)	2	
/4-168	656-7264-002		. LATCH, A/C RIGHT.	1	
	MS51960-68	96906	. SCREW 342-0227-000 (AP)	2	
	656-7267-001		. DOOR ASSEMBLY, AIR CONDITIONER.	2	
	MS51960-67	96906	. SCREW 342-0226-000 (AP)	10	
/4-169	MS16632-1025	96906	. . RING 340-0114-000	2	
/4-170	656-7263-001		. . ROD, LATCH.	1	
/4-171	656-8693-001	96906	. . RAIL 342-0225-000 (AP).	3	
/4-172	656-8712-001		. . GASKET, SIDE.	2	
/4-173	656-8712-002		. . GASKET, LOWER	1	
	656-7266-001		. . LATCH ASSEMBLY, A/C DOOR.	1	
/4-174	656-7265-001		. . . LATCH, LEFT	1	
/4-175	656-7265-002		. . . LATCH, RIGHT.	1	
/4-176	140-0045-000	NONE	. . . RIVET,TUBULAR NP BRS, 0.437 DIA X 0.267 0A.	2	
/4-177	MS21332-41	96906	. . . WASHER 140-1110-000	2	
/4-178	AN3195-11	88044	. . . LATCH BAR 140-1090-000.	2	
/4-179	AN3195-21	81350	. . . LATCH GUIDE 140-1100-000.	2	
/4-180	656-7222-001		. . DOOR, A/C OPENING	1	
/4-181	656-8698-001		. RETAINER, WEATHER SEAL.	1	
	MS24628-24	96906	. SCREW 330-2038-010 (AP)	28	
/4-182	646-8699-001		. WEATHER SEAL.	1	
/4-183	656-8712-003		. GASKET.	1	
/4-184	656-8692-001		. BLOCK, RUBBLING	4	
	MS51959-31	96906	. SCREW 342-0065-000 (AP)	8	
/4-185	MS21326-1	96906	. STUD 140-0196-010	2	
/4-186	NAS620C8L	80205	. WASHER 310-0740-440	2	
/4-187	NAS1329A06KB120	80205	. NUT 334-2720-430.	2	
/4-188	656-8697-001		. CLIP, DOOR SUPPORT RETAINER	2	
	MS51958-65	96906	. SCREW 343-0003-000 (AP)	8	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	8	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	8	
/4-189	656-8695-001		. SPACER, DOOR SUPPORT.	2	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
6 /4-190	656-8696-001		. WEDGE, DOOR ADJUSTMENT	2	
	MS51958-67	96906	. SCREW 343-0231-000 (AP)	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	4	
/4-191	656-8694-001		. DOUBLER, DOOR SUPPORT	2	
	CR2162T8-3	11815	. RIVET,BLIND AL ALY, 0.250 DIA X 0.375 305-2094-560 (AP)	4	
/4-192	A10-166	03481	. NUT,BLIND,RIVET AL, 10-32 334-2716-570	8	
	656-7219-001		. CABLE ASSEMBLY, COAXIAL W238	1	
/6-193	152-0077-020	85480	. . LABEL,CA MKR	3	
/6-194	D20419-21	71468	. . SCREW LOCK ASSEMBLY 371-0040-030	2	
/6-195	DA20963	71468	. . ADAPTER 371-0186-000	1	
/6-196	DCM-37P	71468	. . CONNECTOR,RCPT ELEC 371-0171-000	1	
/6-197	DCM-37S	71468	. . CONNECTOR,RCPT ELEC 371-0222-000	1	
/6-198	7485-10P22	71124	. . CABLE,ELEC 424-0281-100	AR	
	656-7190-001		. CABLE ASSEMBLY, SIGNAL	1	
/6-199	152-0077-040	85480	. . LABEL,CA MKR	3	
/6-200	PL-259A	80058	. . CONNECTOR 357-9006-000	1	
/6-201	UG160DU	80058	. . CONNECTOR 357-9360-000	1	
/6-202	RG213U	80058	. . CABLE 425-0952-000	AR	
/1-203	656-6882-001		. SHELTER, MODIFIED (PARTIAL BREAKDOWN FOLLOWS)	1	
/1-204	S10B116	03481	. . NUT,BLIND RIVET CD PL STL, 10-32 334-2716-670	20	
/1-205	NAS1330S3B166	03481	. . NUT,BLIND RIVET CD PL STL, 10-32 334-2706-010	40	
/1-206	S10B116	03481	. . NUT,BLIND RIVET CD PL STL, 10-32 334-2716-670	24	
/2-207	S31-425	03481	. . NUT,BLIND,RIVET CD PL STL, 5/16-18 334-2716-630	29	
/1-208	656-7051-001		. . SHIM, FRAME SUPPORT	1	
/1-209	656-7158-002		. . SHIM, FRAME AIR CONDITIONER OPENING	3	
/1-210	656-7158-001		. . SHIM, FRAME AIR CONDITIONER OPENING	6	
/5-211	MS51957-80	96906	. . SCREW 343-0266-000	2	
/5-212	MS35338-139	96906	. . WASHER 310-0288-000	2	
/5-213	MS15795-810	96906	. . WASHER 310-0779-100	2	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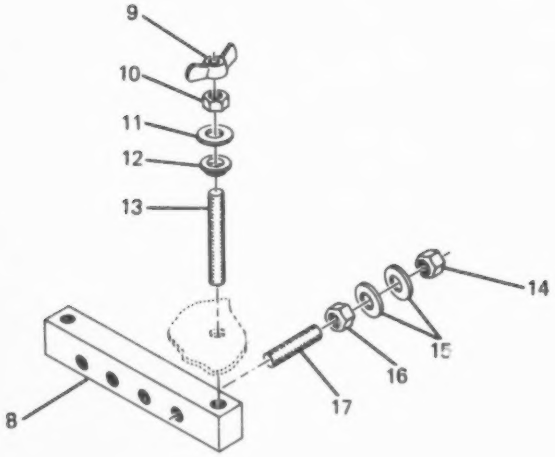
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Figure 6-7. Power Entry Panel Assembly

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
7	656-7252-001		PANEL ASSEMBLY, POWER ENTRY (SEE FIGURE 6 FOR . . . NHA)	REF	
-1	656-7028-001		. PLATE, INSTRUCTION.	1	
	AD44H	07707	. RIVET,BLIND AL, 0.125 DIA X 0.420 305-2060-040 . (AP)	4	
-2	656-7029-001		. PLATE, INFORMATION.	1	
	AD44H	07707	. RIVET,BLIND AL, 0.125 DIA X 0.420 305-2060-040 . (AP)	2	
-3	7-8648-5	02660	. CONNECTOR,RCPT ELEC 368-0260-010.	2	
	MS51957-18	96906	. SCREW 343-0138-000 (AP)	8	
	MS15795-803	96906	. WASHER 310-0779-030 (AP).	8	
	MS21044C04	96906	. NUT 333-1299-000 (AP)	8	
-4	10-40450-22	77820	. GASKET,FLANGE 371-8374-080.	2	
-5	M5423-14-05	81349	. BOOT 260-4034-030	1	
-6	APL1-531-350	81541	. CIRCUIT BREAKER 260-4006-350.	1	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	2	
	110-5	25184	. WASHER,SEALING CD PL STL, 0.195 ID X 0.315 OD . . 310-0440-000 (AP)	2	
-7	126-5220-001		. CONNECTOR	1	
-8	656-3419-001		. BAR, GROUND	1	
	P342-0243-000	77250	. SCREW,MACH NP BRS, 1/4-20 X 3/4 342-0243-000 . . (AP)	1	
-9	334-1115-000	45722	. NUT,PLAIN,WING BRS, 1/4-20.	1	
-10	P313-0148-000	77250	. NUT,PLAIN,HEX NP BRS, 1/4-20 313-0148-000	1	
-11	AN961-416T	88044	. WASHER 310-0751-050	1	
-12	800-030-1-4	83259	. RETAINER-RING 310-0573-000.	1	
-13	P312-0262-000	77250	. STUD,CONT THD BRS, 1/4-20 X 2 312-0262-000. . . .	1	
-14	MS17830-4C	96906	. NUT 333-0428-000.	1	
-15	AN961-416T	88044	. WASHER 310-0751-050	2	
-16	P313-0148-000	77250	. NUT,PLAIN,HEX NP BRS, 1/4-20 313-0148-000	1	
-17	P312-0259-000	77250	. STUD,CONT THD BRS, 1/4-20 X 1-1/4 312-0259-000. .	1	
	656-6901-001		. PANEL, MOD-POWER ENTRY.	1	
-18	126-5183-001		. . PANEL, CABLE ENTRY.	1	

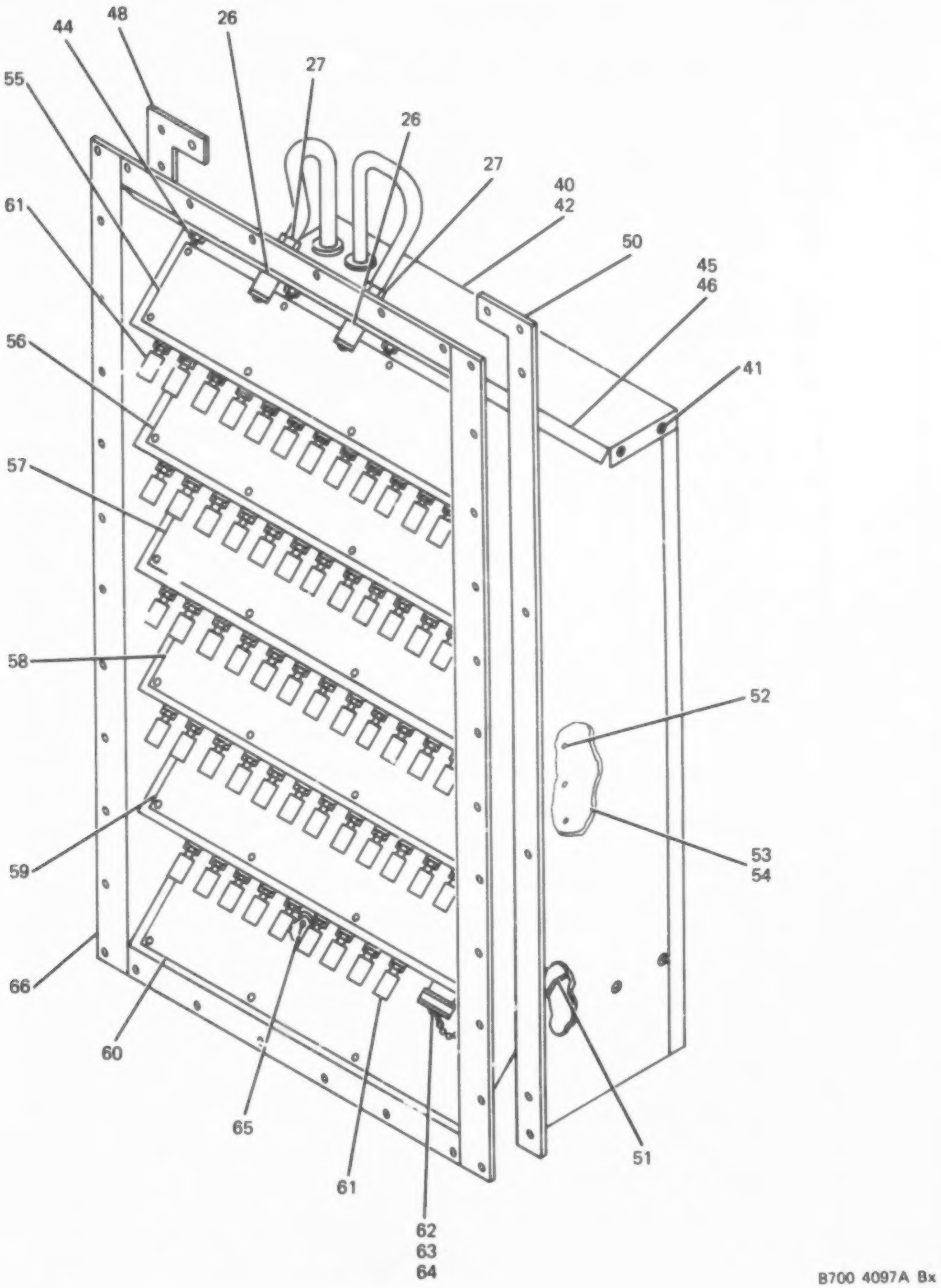
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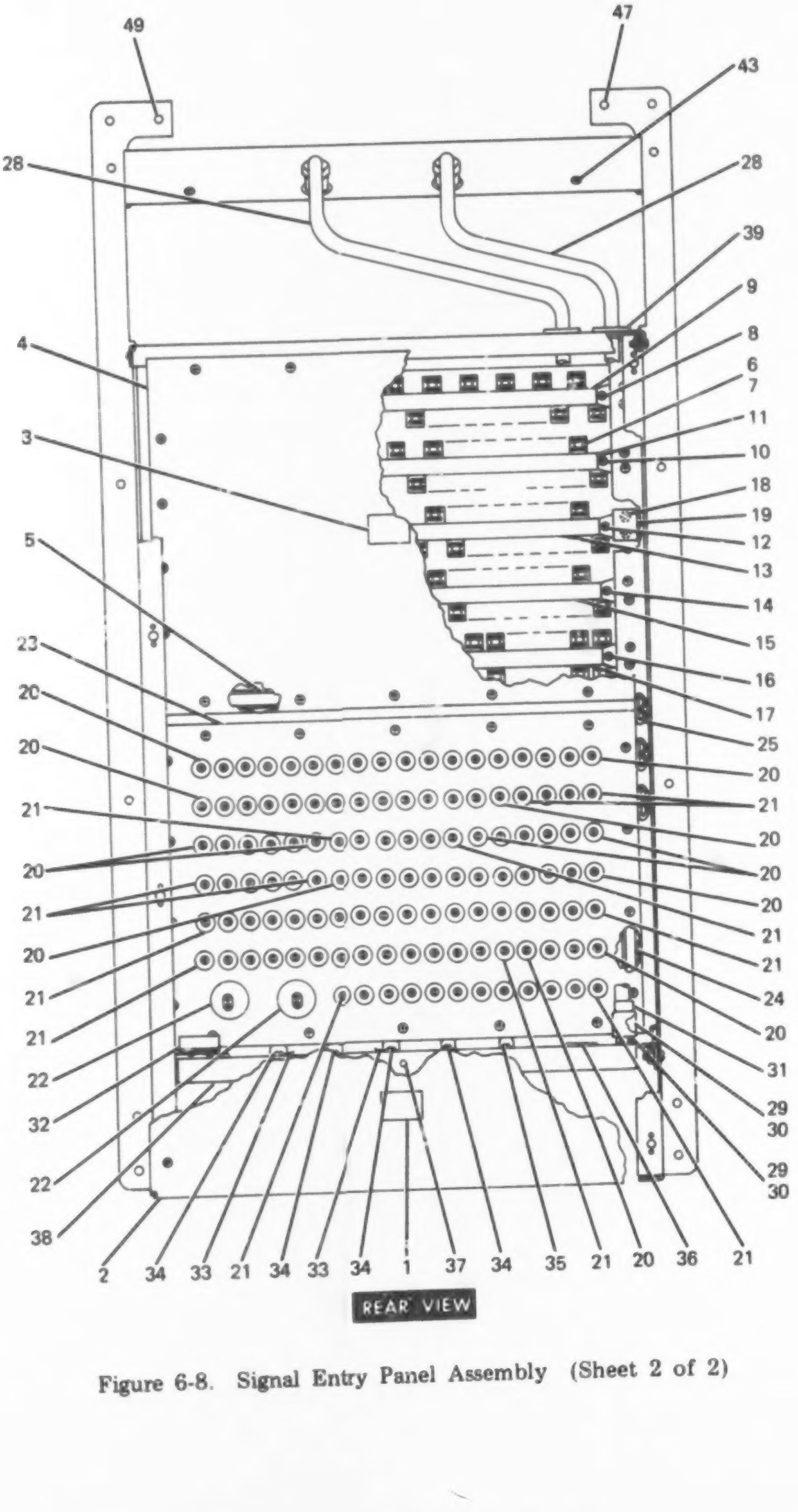
Figure 6-8. Signal Entry Panel Assembly (Sheet 1 of 2)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REAR VIEW

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Figure 6-8. Signal Entry Panel Assembly (Sheet 2 of 2)

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
8	656-6889-001		PANEL ASSEMBLY, SIGNAL ENTRY (SEE FIGURE 6 FOR NHA)	REF	
/2-1	280-1368-060	12998	. LABEL,PRESSURE SENS	1	
/2-2	656-6922-001		. COVER, SIGNAL ENTRY	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	9	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	9	
/2-3	280-1368-060	12998	. LABEL,PRESSURE SENS	1	
/2-4	656-6907-001		. COVER, SPARK GAP.	1	
	MS51958-63	96906	. SCREW 343-0228-000 (AP)	18	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	18	
/2-5	656-7242-001		. GASKET, COVER-SPARKGAP (ALTERED FROM P/N 43-00042 MFG BY 07700)	1	
/2-6	A1A230	25088	. ARRESTOR,ELEC 013-1455-080.	122	
/2-7	A1A1	25088	. ARRESTOR,ELEC 013-1455-120.	122	
	MS51957-19	96906	. SCREW 343-0139-000 (AP)	122	
	MS15795-803	96906	. WASHER 310-0779-030 (AP).	122	
	MS35338-135	96906	. WASHER 310-0279-000 (AP).	122	
	MS35649-244	96906	. NUT 313-0043-000 (AP)	2	
	656-6909-001		. MOUNT, SPARK GAP.	1	
	MS51957-25	96906	. SCREW 343-0166-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
/2-8	M45938-4-5	81349	. . NUT 334-1476-000.	2	
/2-9	656-6954-001		. . MOUNT	1	
	656-6909-002		. MOUNT, SPARK GAP.	1	
	MS51957-25	96906	. SCREW 343-0166-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
/2-10	M45938-4-5	81349	. . NUT 334-1476-000.	2	
/2-11	656-6954-002		. . MOUNT	1	
	656-6909-003		. MOUNT, SPARK GAP.	1	
	MS51957-25	96906	. SCREW 343-0166-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
/2-12	M45938-4-5	81349	. . NUT 334-1476-000.	2	
/2-13	656-6954-003		. . MOUNT	1	
	656-6909-004		. MOUNT, SPARK GAP.	1	
	MS51957-25	96906	. SCREW 343-0166-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
/2-14	M45938-4-5	81349	. . NUT 334-1476-000.	2	
/2-15	656-6954-004		. . MOUNT	1	
	656-6955-001		. MOUNT, SPARK GAP-LOWER.	1	
	MS51957-25	96906	. SCREW 343-0166-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
/2-16	M45938-4-5	81349	. . NUT 334-1476-000.	2	
/2-17	656-6955-002		. . MOUNT	1	
	656-6940-001		. BRACKET, SPARK GAP.	10	
	MS51957-25	96906	. SCREW 343-0166-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
/2-18	M45938-4-5	81349	. . NUT 334-1476-000.	2	
/2-19	656-6940-002		. . BRACKET	1	
/2-20	JW33-1085B	56289	. FILTER,RAD INTR 241-0602-010.	60	
/2-21	JW17-4435A	56289	. FILTER,RAD INTR 241-0602-020.	60	
/2-22	JN17-4327A	56289	. FILTER,LP 241-0303-000.	2	
/2-23	656-6906-001		. PANEL, INTERFACE FILTER	1	
	MS51958-63	96906	. SCREW 343-0228-000 (AP)	36	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	18	
/2-24	656-7243-001		. GASKET, INTERFACE-FILTER (ALTERED FROM PIN 43-00042 MFG BY 07700)	1	
/2-25	547-5305-002	13499	. TERMINAL, LUG	3	
	P313-0045-000	77250	. NUT,PLAIN,HEX SST, 6-32 313-0045-000 (AP)	3	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	3	
	NAS620C6	80205	. WASHER 310-0740-400 (AP).	3	
/1-26	M39012-25-0011	81349	. COVER 357-9358-000.	2	
	MS51959-15	96906	. SCREW 342-0046-000 (AP)	2	
	800-030-6	83259	. RETAINER-RING 310-0571-000 (AP)	2	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
8	MS21044C04	96906	. NUT 333-1299-000 (AP)	2	
/1-27	UG160DU	80058	. CONNECTOR 357-9360-000.	2	
/2-28	RG213U	80058	. CABLE 425-0952-000.	7	
/2-29	UG-224/U	80058	. ADAPTER 357-9062-020.	2	
/2-30	83-23	74868	. COAXIAL, LIGHTINING ARRESTOR.	2	
/2-31	PL-259A	80058	. CONNECTOR 357-9006-000.	2	
/2-32	PT07A20-39P	77820	. CONNECTOR,RCPT ELEC 371-8597-010.	1	
/2-33	MS77068-1	96906	. TERMINAL 304-3110-010	2	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	2	
	NAS620C4	80205	. WASHER 310-0740-240 (AP).	4	
	MS35338-135	96906	. WASHER 310-0279-000 (AP).	2	
	P313-0132-000	77250	. NUT,PLAIN,HEX SST, 4-40 313-0132-000 (AP)	2	
/2-34	DCM37S	71468	. CONNECTOR,RCPT ELEC 371-0222-000.	4	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	6	
	NAS620C4	80205	. WASHER 310-0740-240 (AP).	12	
	MS35338-135	96906	. WASHER 310-0279-000 (AP).	6	
	P313-0132-000	77250	. NUT,PLAIN,HEX SST, 4-40 313-0132-000 (AP)	6	
/2-35	DDM50S	71468	. CONNECTOR,RCPT 371-0181-000	1	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	2	
	NAS620C4	80205	. WASHER 310-0740-240 (AP).	4	
	MS35338-135	96906	. WASHER 310-0279-000 (AP).	2	
	P313-0132-000	77250	. NUT,PLAIN,HEX SST, 4-40 313-0132-000 (AP)	2	
/2-36	MS35489-19	96906	. GROMMET 201-0009-000.	1	
	656-6937-001		. PANEL, PATCH-LOWER.	1	
	MS51957-46	96906	. SCREW 343-0190-000 (AP)	4	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	8	
	MS21044C08	96906	. NUT 333-1301-000 (AP)	4	
/2-37	NAS1068A3	80205	. . NUT 333-0890-000.	1	
/2-38	656-6937-002		. . PANEL	1	
/2-39	656-6968-001		. . GROMMET (ALTERED FROM P/N MS35489-19)	2	
/1-40	656-6908-001		. PANEL, PATCH-TOP LOWER.	1	
/1-41	MS51957-29	96906	. SCREW 343-0170-000 (AP)	4	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	4	
	MS21044C06	96906	. NUT 333-1300-000 (AP)	4	
/1-42	MS51957-28	96906	. SCREW 343-0169-000 (AP)	4	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	4	
	656-6935-001		. PANEL, PATCH, UPPER	1	
/2-43	MS51957-31	96906	. SCREW 343-0173-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
	110-5	25184	. WASHER,SEALING CD PL STL, 0.195 ID X 0.315 OD 310-0440-000 (AP)	2	
	MS21044C06	96906	. NUT 333-1300-000 (AP)	2	
/1-44	MS51960-66	96906	. SCREW 342-0225-000 (AP)	4	
	2110-0190CADPL	25184	. WASHER,SEALING CD PL STL, 0.281 ID X 0.422 OD 310-0423-000 (AP)	4	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	4	
/1-45	MS21075L06	96906	. . NUT 333-1032-000.	4	
	MS20470AD3-6	96906	. . RIVET 305-1157-000 (AP)	8	
/1-46	656-6935-002		. . PANEL	1	
	656-6957-001		. SIDE, LEFT, SIGNAL ENTRY.	1	
/2-47	NAS1068A3	80205	. . NUT 333-0890-000.	4	
	MS20426AD3-6	96906	. . RIVET 305-1364-000 (AP)	8	
/1-48	656-6957-004		. . SIDE, LEFT.	1	
	656-6957-002		. SIDE, RIGHT, SIGNAL ENTRY	1	
/2-49	NAS1068A3	80205	. . NUT 333-0890-000.	4	
	MS20426AD3-6	96906	. . RIVET 305-1364-000 (AP)	8	
/1-50	656-6957-003		. . SIDE, RIGHT	1	
/1-51	656-7253-001		. BRACKET, ENTRY-RF1.	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	12	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	8	
	656-6975-001		. COVER, ENTRY-RF1.	1	
/1-52	NCS6-3-16	07886	. . STUD,CAPTIVE STL, 6-32 X 1/2 330-4022-350	2	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
8 /1-53	NAS1068A3	80205	. . NUT 333-0890-000.	36	
	MS20426AD3-6	96906	. . RIVET 305-1364-000 (AP)	72	
/1-54	656-6975-002		. . COVER	1	
/1-55	656-6982-006		. PLACARD, SIGNAL ENTRY	1	
	AD43H	07707	. RIVET,BLIND AL, 0.125 DIA X 0.357 305-2060-030 (AP)	8	
/1-56	656-6982-001		. PLACARD, SIGNAL ENTRY	1	
	AD43H	07707	. RIVET,BLIND AL, 0.125 DIA X 0.357 305-2060-030 (AP)	8	
/1-57	656-6982-002		. PLACARD, SIGNAL	1	
	AD43H	07707	. RIVET,BLIND AL, 0.125 DIA X 0.357 305-2060-030 (AP)	8	
/1-58	656-6982-003		. PLACARD, SIGNAL ENTRY	1	
	AD43H	07707	. RIVET,BLIND AL, 0.125 DIA X 0.357 305-2060-030 (AP)	8	
/1-59	656-6982-004		. PLACARD, SIGNAL ENTRY	1	
	AD43H	07707	. RIVET,BLIND AL, 0.125 DIA X 0.357 305-2060-030 (AP)	8	
/1-60	656-6982-005		. PLACARD, ENTRY SIGNAL	1	
	AD43H	07707	. RIVET,BLIND AL, 0.125 DIA X 0.357 305-2060-030 (AP)	8	
/1-61	U106U	81349	. POST 372-1154-000	112	
/1-62	MS3181-20C	96906	. COVER 371-8363-160.	1	
	MS51957-18	96906	. SCREW 343-0138-000 (AP)	1	
	MS15795-803	96906	. WASHER 310-0779-030 (AP).	2	
	MS21044C04	96906	. NUT 333-1299-000 (AP)	1	
/1-63	BT02A20-39P	09922	. CONNECTOR,RCPT ELEC 371-2363-000.	1	
	MS51957-17	96906	. SCREW 343-0137-000 (AP)	3	
	MS15795-803	96906	. WASHER 310-0779-030 (AP).	6	
	MS21044C04	96906	. NUT 333-1299-000 (AP)	3	
/1-64	10-101949-20	77820	. GASKET,FLANGE 371-8507-000.	1	
	656-6980-001		. PANEL, SIGNAL ENTRY	1	
/1-65	FHS1032-12	46384	. . STUD,CAPTIVE SST, 10-32 X 3/4 330-2816-000.	4	
/1-66	656-6980-002		. . PANEL	1	

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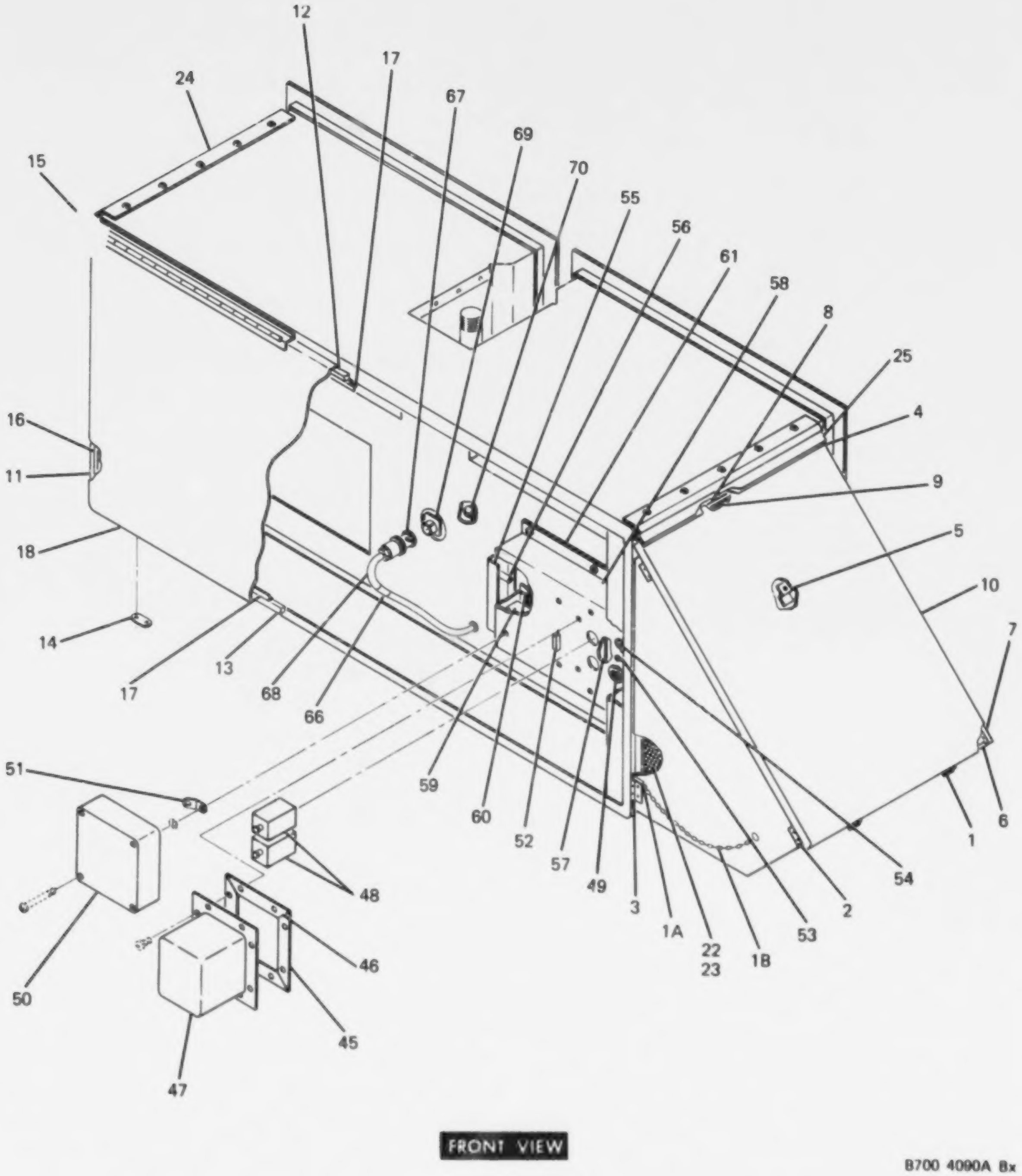
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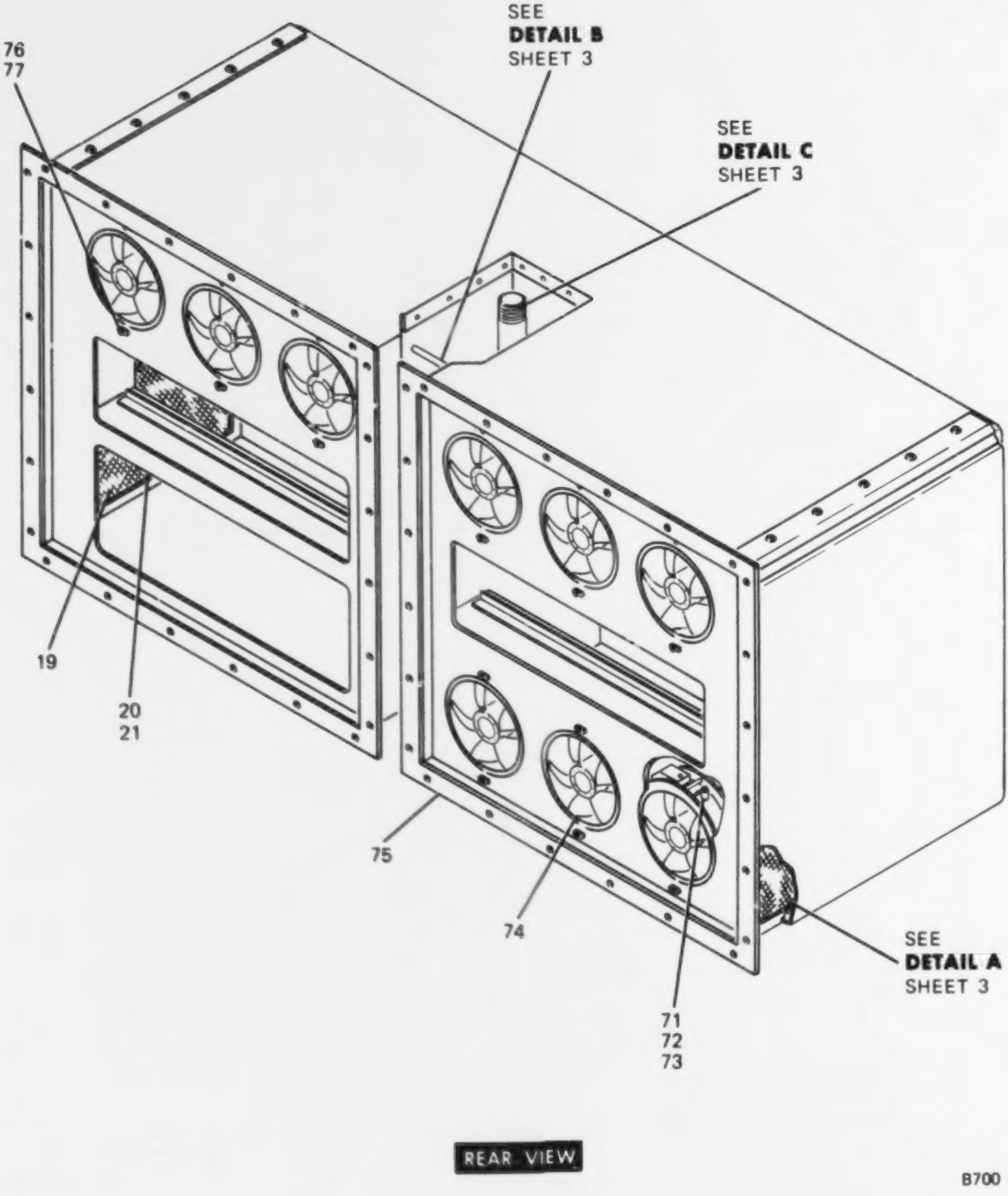
Figure 6-9. Blower Fan Assembly (Sheet 1 of 3)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REAR VIEW
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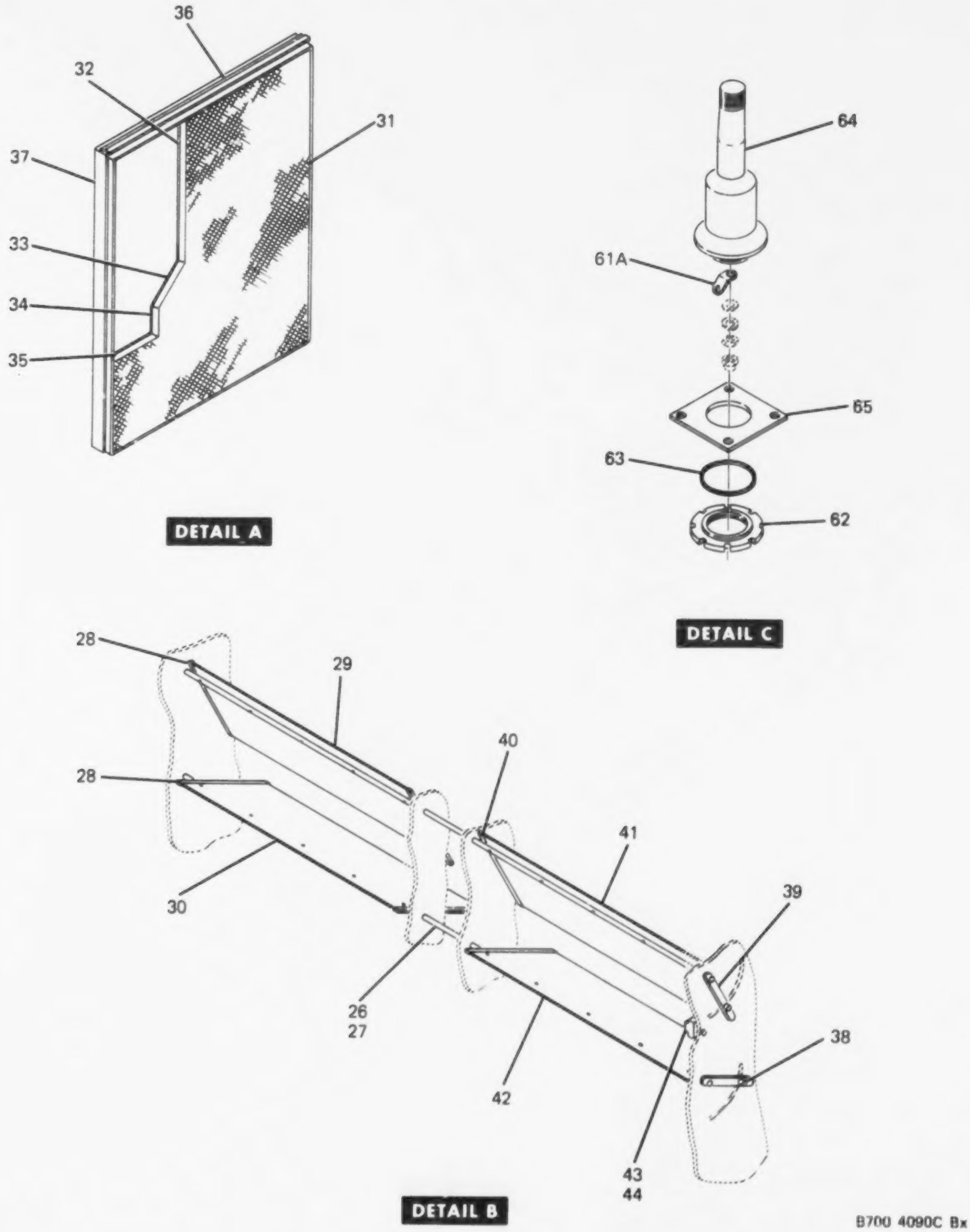
Figure 6-9. Blower Fan Assembly (Sheet 2 of 3)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DETAIL B
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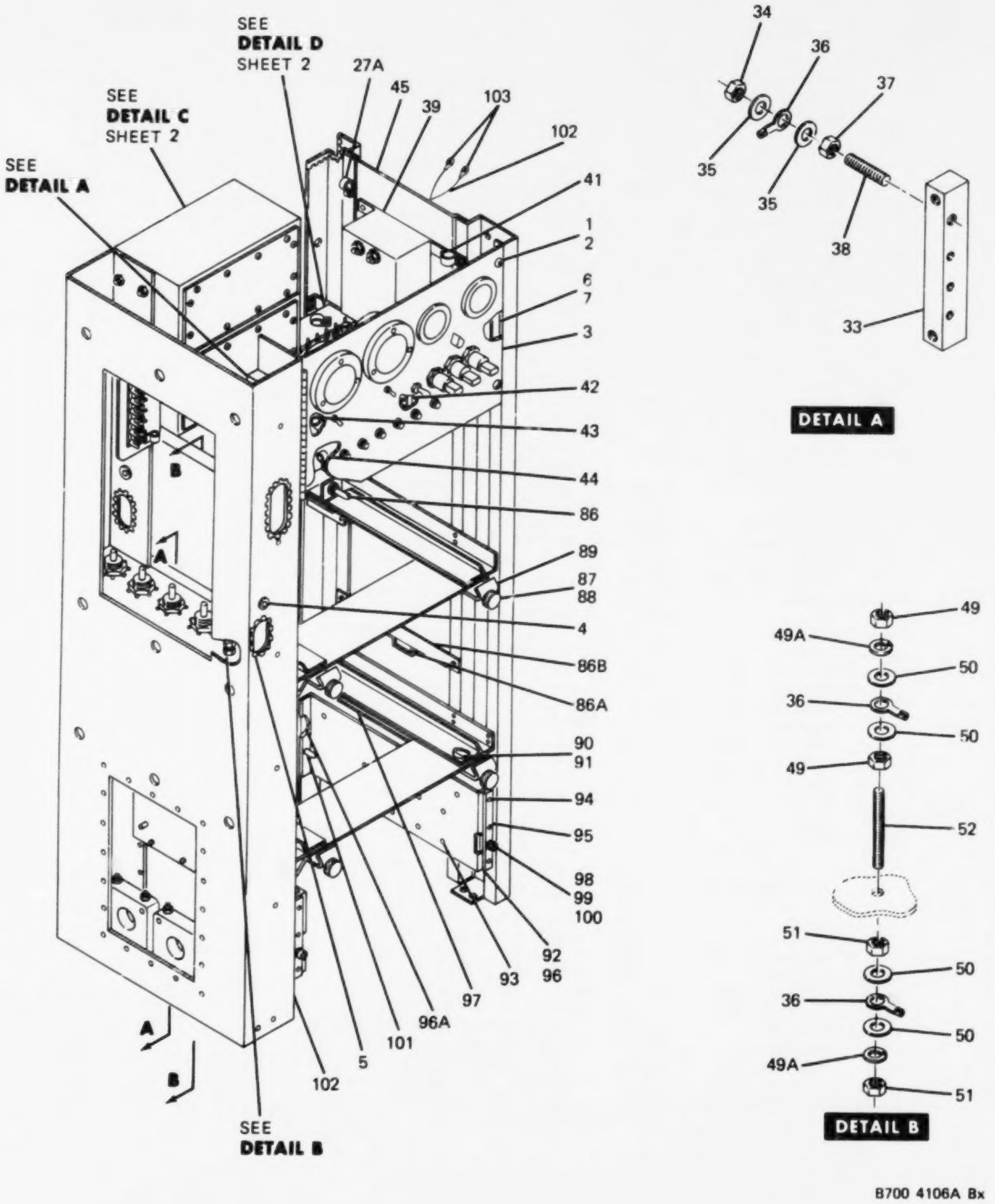
Figure 6-9. Blower Fan Assembly (Sheet 3 of 3)

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
9	656-6887-001		FAN ASSEMBLY, BLOWER (SEE FIGURE 6 FOR NHA)	REF	
	656-7013-001		. COVER, EXHAUST/INTAKE	2	
	MS51957-32	96906	. SCREW 343-0174-000 (AP)	10	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	32	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	16	
	110-6	25184	. WASHER,SEALING CD PL STL, 0.208 ID X 0.328 OD 310-0441-000 (AP)	16	
	MS35649-264	96906	. NUT 313-0002-000 (AP)	16	
/1-1	015-1913-000	82240	. . KEEPER PLATE.	2	
	MS20470AD4-5	96906	. . RIVET 305-1170-000 (AP)	4	
	656-7010-001		. . HINGE	4	
/1-1A	656-7009-001		. . PIN CAPTAVATING	2	
/1-1B	656-7014-001		. . CHAIN, CAPTAVATING.	2	
	AD42AH	07707	. . RIVET,BLIND AL, 0.125 DIA X 0.310 305-2060-210 (AP)	2	
/1-2	MS20257-5-7200	96906	. . . HINGE 015-3023-050.	1	
	656-7012-001		. . LEAF, HINGE	2	
/1-3	MS20257H5-7200	96906	. . . LEAF 015-3023-110	1	
	656-7016-001		. . HINGE, COVER EXHAUST.	1	
/1-4	MS20257-5-7200	96906	. . . HINGE 015-3023-050.	2	
/1-5	656-7018-001		. . CLIP, RAINFLAP.	1	
	MS16535-154	96906	. . RIVET 305-1809-000 (AP)	1	
/1-6	656-7015-001		. . GASKET.	1	
/1-7	656-7015-003		. . GASKET.	2	
/1-8	656-7015-002		. . GASKET.	1	
/1-9	656-7013-002		. . RAINFLAP.	2	
/1-10	656-7013-003		. . COVER	1	
	656-7033-001		. COVER, ACCESS	1	
	MS51957-29	96906	. SCREW 343-0170-000 (AP)	11	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	22	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	11	
	MS35649-264	96906	. NUT 313-0002-000 (AP)	11	
/1-11	656-7015-003		. . GASKET.	2	
/1-12	656-7015-005		. . GASKET.	1	
/1-13	656-7015-004		. . GASKET.	1	
/1-14	015-1913-000	82240	. . KEEPER PLATE.	4	
	MS20470AD4-5	96906	. . RIVET 305-1170-000 (AP)	8	
	656-7032-001		. . HINGE, COVER.	1	
/1-15	MS20257H5-7200	96906	. . . LEAF 015-3023-110	4	
/1-16	656-7033-004		. . ANGLE	2	
/1-17	656-7033-003		. . ANGLE	2	
/1-18	656-7033-002		. . COVER	1	
	656-7042-001		. RETAINER, FILTER-AIR.	1	
	MS51957-33	96906	. SCREW 343-0175-000 (AP)	4	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	4	
/2-19	656-7042-003		. . FILTER.	1	
/2-20	656-7042-002		. . RETAINER.	2	
/2-21	YAE10N5	09922	. TERMINAL,LUG 304-0641-000	4	
	656-7041-001		. FRAME, FILTER-AIR	1	
	MS51959-28	96906	. SCREW 342-0062-000 (AP)	8	
/1-22	656-7041-003		. . CLOTH (WIRE).	1	
/1-23	656-7041-002		. . FRAME	1	
	MS21075L06	96906	. . NUT 333-1032-000 (AP)	4	
	MS20470AD3-5	96906	. . RIVET 305-1156-000 (AP)	8	
/1-24	656-7040-001		. GUIDE, DRIP STRIP	2	
	MS51957-32	96906	. SCREW 343-0174-000 (AP)	10	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	20	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	10	
	110-6	25184	. WASHER,SEALING CD PL STL, 0.208 ID X 0.328 OD 310-0441-000 (AP)	10	
	310-0002-000	79807	. WASHER,ROUND,FLAT STL, 0.187 ID X 0.375 OD (AP)	10	
/1-25	656-7039-001		. STRIP, DRIP	2	
/3-26	656-7005-001		. ROD, VENT	2	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
9 /3-27	5L1FF	96881	. BEARING,SLV 309-0798-000.	8	
/3-28	NX6120	70485	. RUBBER CHANNEL 200-1143-000	2	
/3-29	656-7006-002		. VENT, FLUSHING AIR-LEFT	1	
	MS51957-29	96906	. SCREW 343-0170-000 (AP)	5	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	5	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	5	
/3-30	656-7006-004		. VENT, RECIRCULATE-LEFT.	1	
	MS51957-29	96906	. SCREW 343-0170-000 (AP)	5	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	5	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	5	
	656-7062-001		. SCREEN,AIR OUTLET	1	
/3-31	656-7062-008		. . SCREEN.	1	
/3-32	656-7062-004		. . STIFFENER	1	
/3-33	656-7062-005		. . STIFFENER	1	
/3-34	656-7062-006		. . STIFFENER	1	
/3-35	656-7062-007		. . STIFFENER	1	
/3-36	656-7062-003		. . ANGLE	1	
/3-37	656-7062-002		. . FRAME	1	
/3-38	4041	00141	. THUMBSCREW SST, 10-32 X 3/4 330-4049-320.	2	
	656-7072-001		. WASHER (AP)	3	
/3-39	656-7007-001		. HANDLE, VENT.	2	
	MS51957-44	96906	. SCREW 343-0188-000 (AP)	2	
	MS35338-137	96906	. WASHER 310-0072-000 (AP).	2	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	2	
/3-40	NX6120	70485	. RUBBER CHANNEL 200-1143-000	2	
	656-7134-001		. PANEL, VENT	1	
	MS51957-29	96906	. SCREW 343-0170-000 (AP)	5	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	5	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	5	
/3-41	656-7006-001		. . VENT,FLUSHING AIR-RIGHT	1	
	68NA7-68-02	72962	. . NUT,SLFLKG,PL AL, 10-32 333-5620-050 (AP)	1	
	MS20470AD3-4	96906	. . RIVET 305-1155-000 (AP)	2	
	656-7134-002		. PANEL, VENT	1	
	MS51957-29	96906	. SCREW 343-0170-000 (AP)	5	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	5	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	5	
/3-42	656-7006-003		. . VENT, RECIRCULATE-RIGHT	1	
	68NA7-68-02	72962	. . NUT,SLFLKG,PL AL, 10-32 333-5620-050 (AP)	1	
	MS20470AD3-4	96906	. . RIVET 305-1155-000 (AP)	2	
/3-43	MS27735-23	96906	. SWITCH 266-5414-110	1	
/3-44	MS423-02-01	81349	. BOOT 266-0123-000	1	
	656-7080-001		. COVER, AC POWER	1	
	MS51957-28	96906	. SCREW 343-0169-000 (AP)	8	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	8	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	8	
/1-45	656-7079-001		. . GASKET (EMI).	2	
/1-46	656-7079-002		. . GASKET (EMI).	2	
/1-47	656-7080-002		. . COVER	1	
/1-48	JN17-4327A	56289	. FILTER,LP 241-0303-000.	2	
/1-49	656-7273-001		. CABLE (CONDUIT)	1	
	656-7236-001		. NUT, FITTING-JUNCTION (AP).	2	
/1-50	651-4140-001		. CONVERTER (MODULE 400 TO 57 HZ)	1	
	MS51957-26	96906	. SCREW 343-0167-000 (AP)	1	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	1	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	1	
/1-51	MS25036-101	96906	. TERMINAL 304-0127-000	1	
/1-52	DEMF9S	71468	. CONNECTOR,RCPT ELEC 371-0164-000.	1	
	MS51957-4	96906	. SCREW 343-0125-000 (AP)	2	
	MS15795-802	96906	. WASHER 310-0779-020 (AP).	4	
	MS35338-134	96906	. WASHER 310-0275-000 (AP).	2	
	MS35649-224	96906	. NUT 313-0037-000 (AP)	2	
/1-53	MS25036-101	96906	. TERMINAL 304-0127-000	1	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
9	MS35338-138	96906	. WASHER 310-0284-000 (AP).	1	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	1	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	1	
/1-54	MS25281R2	96906	. CLAMP 150-0708-010.	1	
	MS51957-29	96906	. SCREW 343-0170-000 (AP)	1	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	1	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	1	
/1-55	656-7163-001		. COVER, PROTECTIVE	1	
	MS51957-34	96906	. SCREW 343-0176-000 (AP)	2	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
/1-56	541-6037-002	13499	. SPACER,SLV.	2	
	656-7081-001		. PANEL, BACK-FREQUENCY CONVERTER	1	
	MS51957-28	96906	. SCREW 343-0169-000 (AP)	6	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	6	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	6	
/1-57	656-7081-003		. . RIB	1	
/1-58	656-7081-002		. . PANEL (BACK).	1	
	NCN6-1-2	07886	. . NUT,CAPTIVE SST, 6-32 334-0426-000 (AP)	17	
/1-59	JN17-4327A	56289	. FILTER,LP 241-0303-000.	2	
	656-7161-001		. GASKET, EMI	2	
/1-60	677-3010	57003	. . GASKET,RFI 018-0260-010	1	
	656-7162-001		. GASKET, EMI	2	
/1-61	677-3010	57003	. . GASKET,RFI 018-0260-010	1	
	070404	23657	. BASE ASSY 013-1547-000.	1	
	MS24679-25	96906	. NUT 334-2717-150 (AP)	1	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	1	
	MS35338-139	96906	. WASHER 310-0288-000 (AP).	1	
	P313-0082-000	77250	. NUT,PLAIN,HEX SST, 1/4-20 313-0082-000 (AP)	1	
/3-61A	4012HT	77147	. TERMINAL,LUG 304-2800-000	1	
/3-62	9663	23657	. . SPANNER NUT 013-1548-000.	1	
/3-63	9650	23657	. . O-RING SEAL 013-1546-000.	1	
/3-64	070401	23657	. . STICK ASSY 013-1545-000	1	
/3-65	656-6969-001		. PLATE, MOUNTING ANTENNA	1	
	MS90725-64	96906	. SCREW 326-0183-000 (AP)	4	
	MS35338-141	96906	. WASHER 310-0292-000 (AP).	4	
	MS15795-814	96906	. WASHER 310-0779-140 (AP).	4	
	656-7210-001		. CABLE ASSEMBLY, COAXIAL	1	
/1-66	152-0077-040	85480	. . LABEL,CA MKR.	3	
/1-67	M39012-16-0101	81349	. . CONNECTOR 357-9292-000.	2	
	NAS620C3	80205	. WASHER 310-0740-160 (AP).	4	
/1-68	M17-028RG058	81349	. . CABLE 425-0042-000.	AR	
/1-69	M39012-22-0001	81349	. CONNECTOR 357-9111-000.	1	
	330-1748-190	70318	. SCREW,MACH SST, 3-56X1/4 (AP)	4	
	310-0277-000	70318	. WASHER,LOCK SST, 0.102 ID X 0.198 OD (AP)	4	
/1-70	P312-0261-000	77250	. STUD,CONT THD BRS, 1/4-20 X 1-1/2 312-0261-000.	1	
	MS24679-25	96906	. NUT 334-2717-150 (AP)	1	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	2	
	MS35338-139	96906	. WASHER 310-0288-000 (AP).	1	
	P313-0082-000	77250	. NUT,PLAIN,HEX SST, 1/4-20 313-0082-000 (AP)	2	
/2-71	MS51958-60	96906	. SCREW 343-0225-000.	9	
/2-72	MS35338-138	96906	. WASHER 310-0284-000	9	
/2-73	MS15795-808	96906	. WASHER 310-0779-080	9	
/2-74	028309	82877	. BLOWER,TUBEAXIAL 009-0236-030	9	
	MS51957-55	96906	. SCREW 343-0200-000 (AP)	18	
	MS15795-807	96906	. WASHER 310-0779-070 (AP).	18	
/2-75	656-7017-001		. HOUSING, FAN ASSEMBLY	1	
/2-76	MS20426AD3-5	96906	. . RIVET 305-1363-000.	52	
/2-77	NAS1068A08	80205	. NUT 333-0889-000.	18	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DETAIL B
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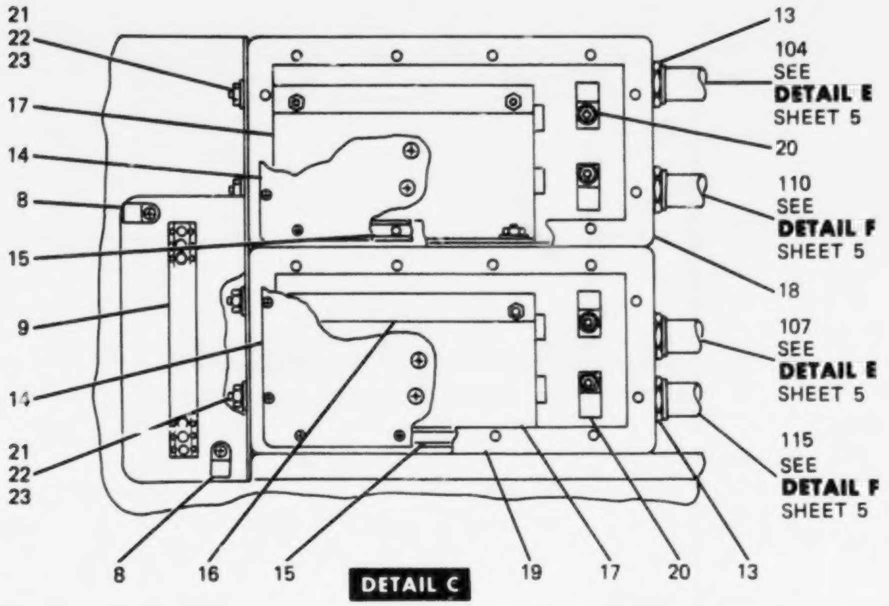
Figure 6-10. Power/Secure Rack Assembly (Sheet 1 of 7)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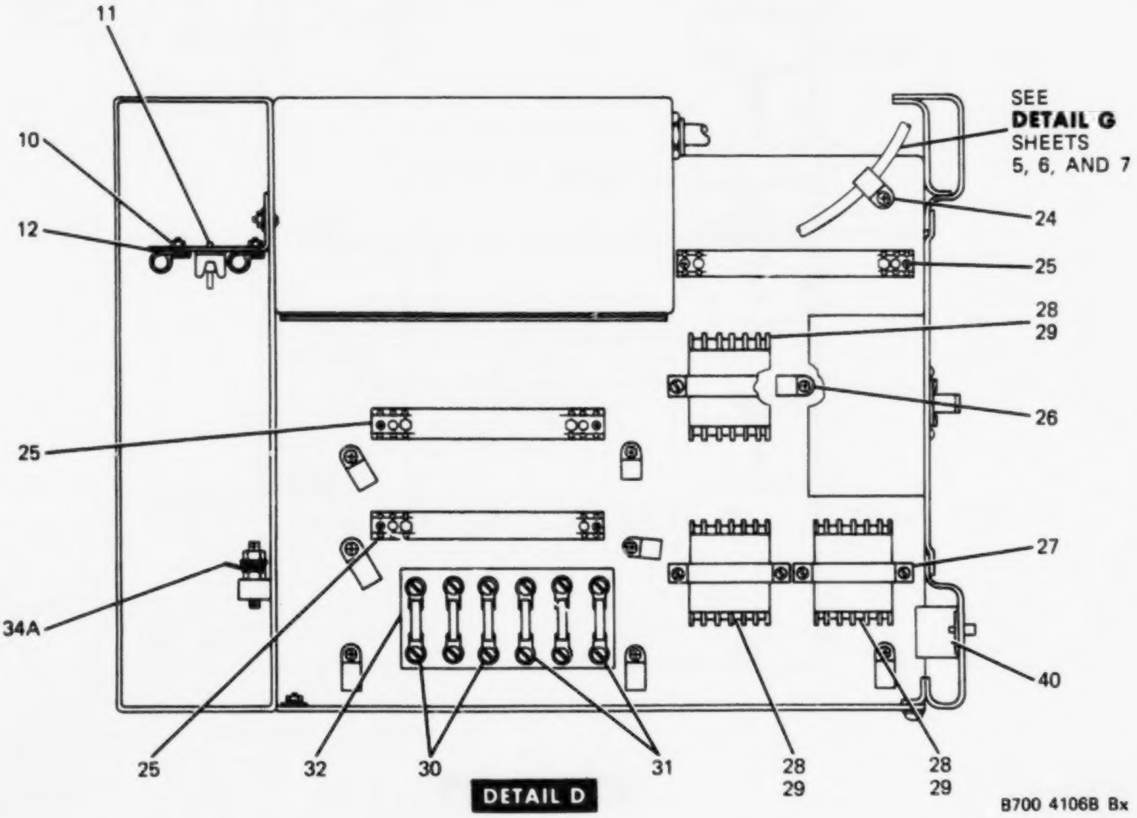
DETAIL C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DETAIL D

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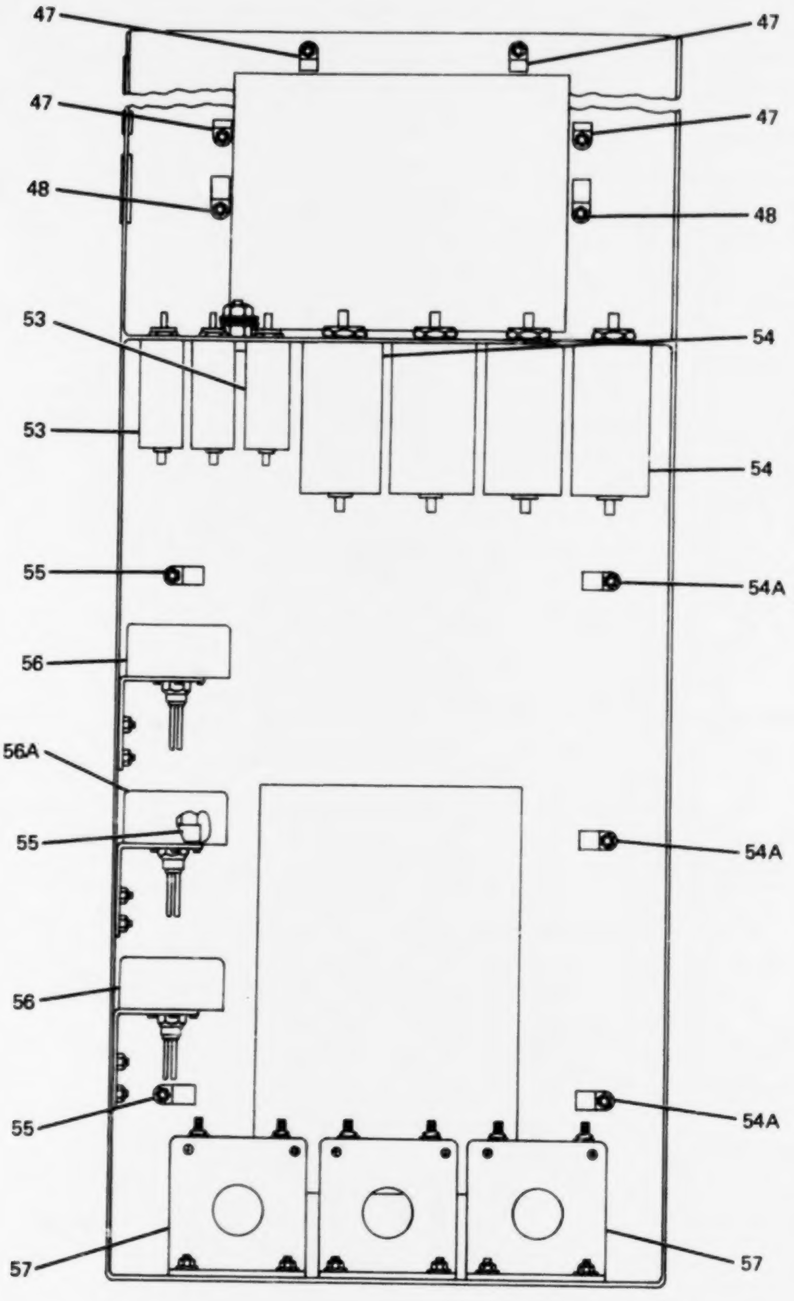
Figure 6-10. Power/Secure Rack Assembly (Sheet 2 of 7)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SECTION A-A

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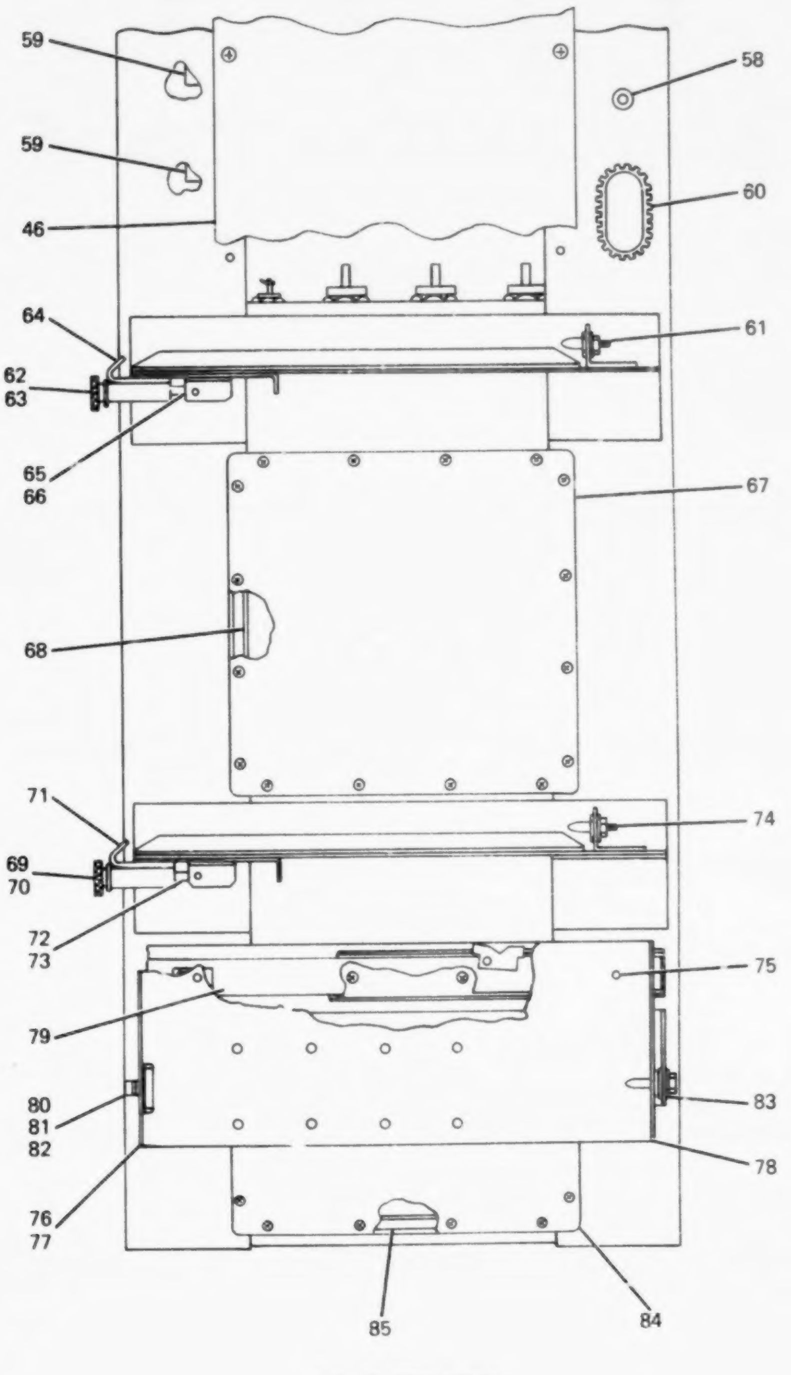
Figure 6-10. Power/Secure Rack Assembly (Sheet 3 of 7)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SECTION B-B

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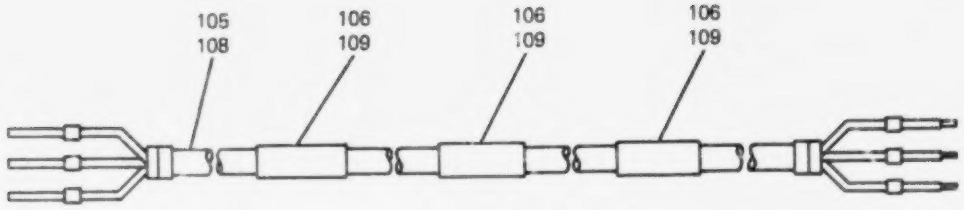
Figure 6-10. Power/Secure Rack Assembly (Sheet 4 of 7)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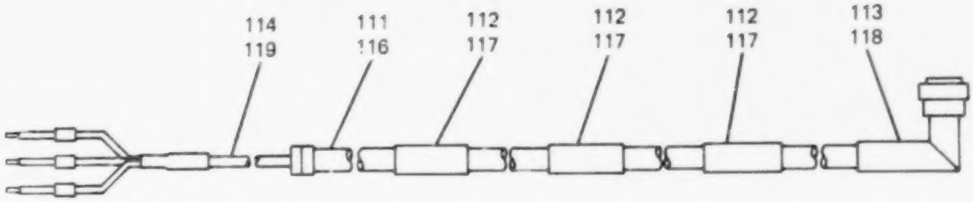
DETAIL E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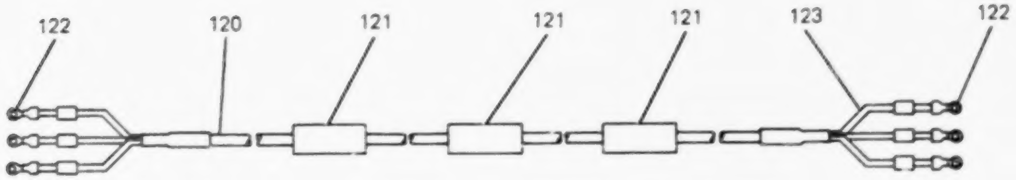
DETAIL F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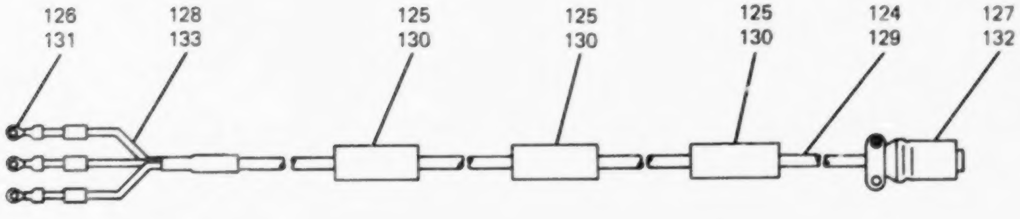
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DETAIL G

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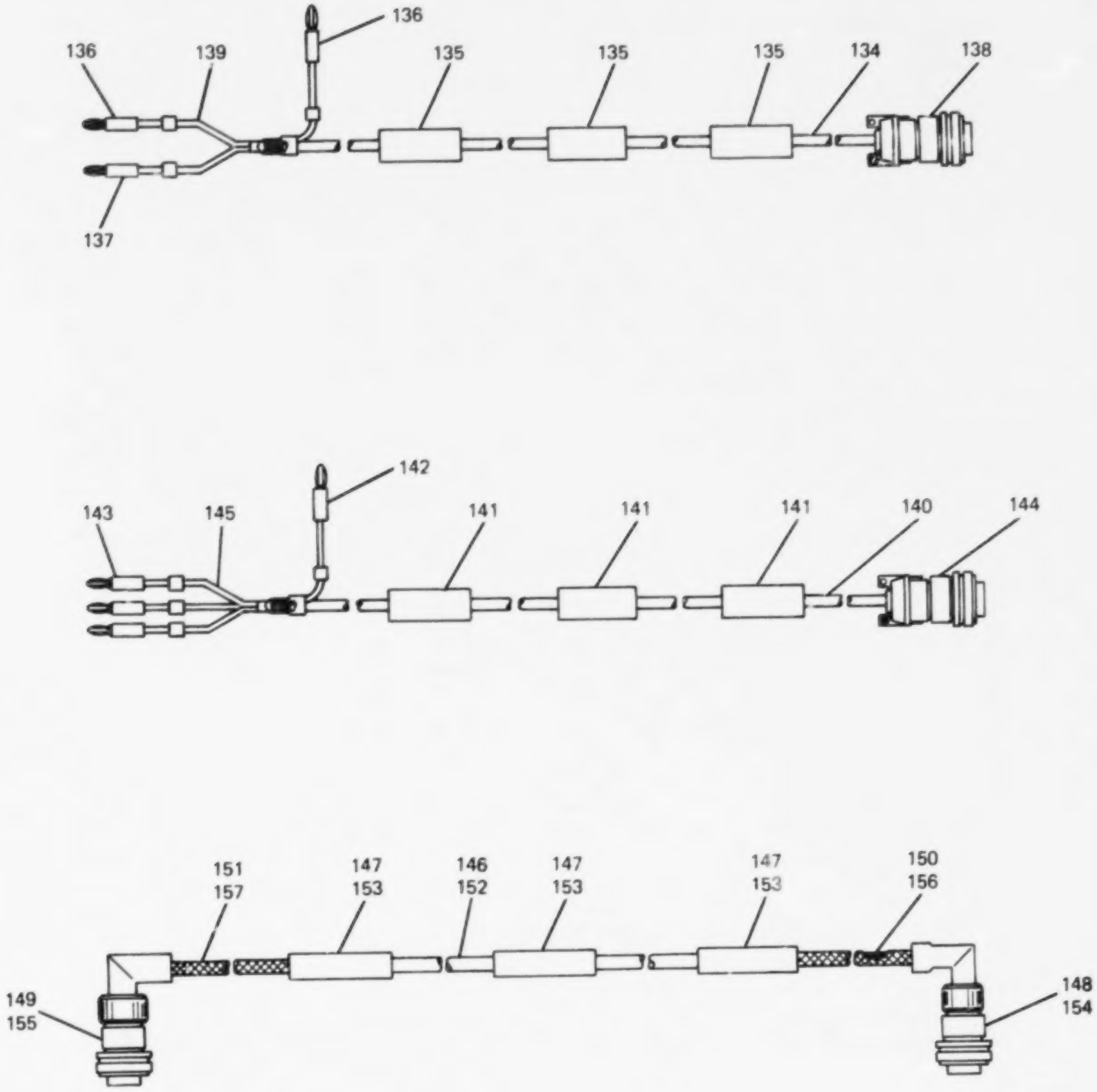
Figure 6-10. Power/Secure Rack Assembly (Sheet 5 of 7)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DETAIL G

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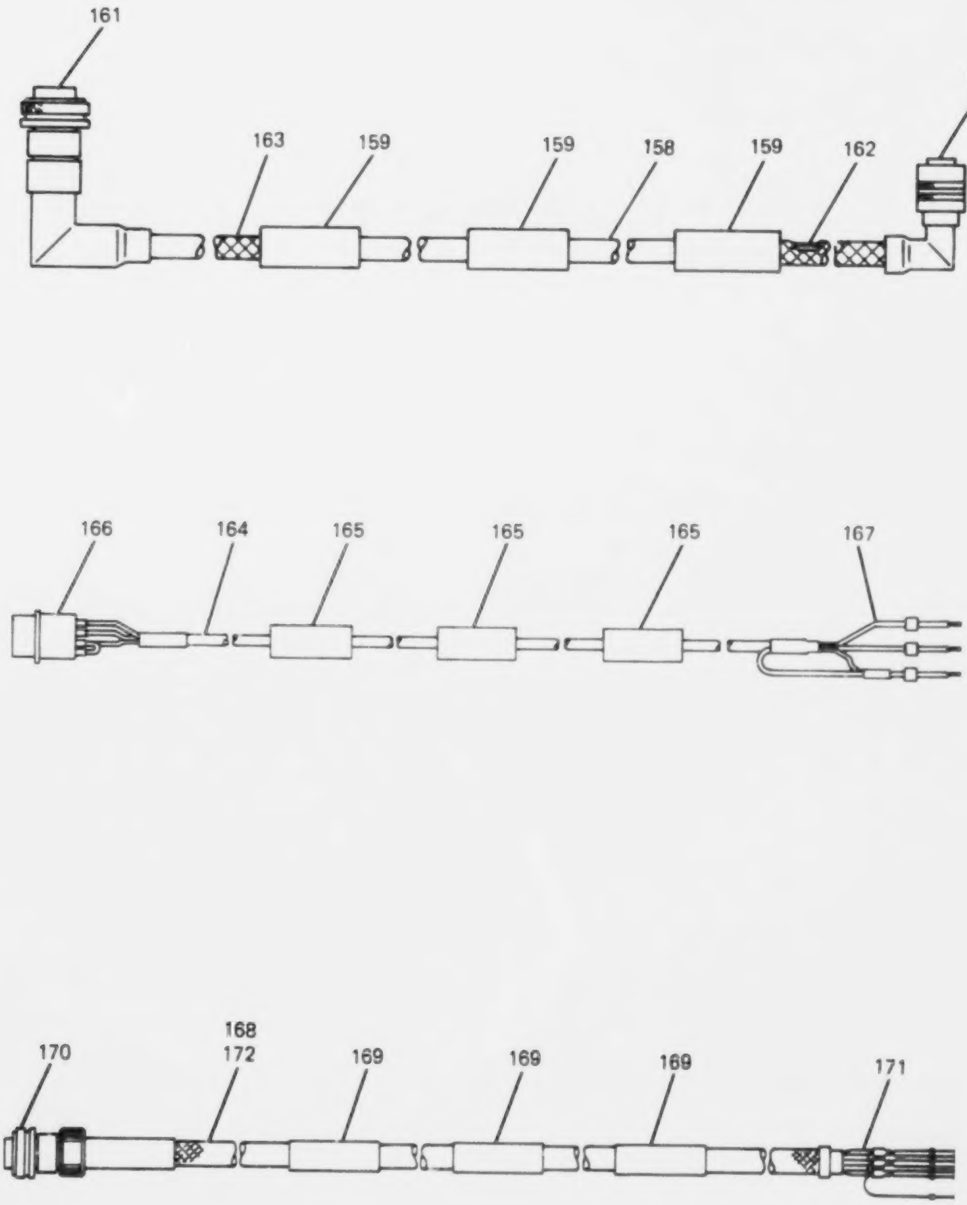
Figure 6-10. Power/Secure Rack Assembly (Sheet 6 of 7)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DETAIL G

B700 4154C Bx

Figure 6-10. Power/Secure Rack Assembly (Sheet 7 of 7)

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
10	656-6884-001		RACK ASSEMBLY, POWER/SECURE (SEE FIGURE 6 FOR NHA)	REF	
/1-1	MS51958-62	96906	. SCREW 343-0227-000	2	
/1-2	MS15795-808	96906	. WASHER 310-0779-080	2	
/1-3	656-7247-001		. PANEL ASSEMBLY, POWER DISTRIBUTION (SEE FIGURE 11 FOR BREAKDOWN)	1	
	MS51958-60	96906	. SCREW 343-0225-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	4	
/1-4	MS35489-35	96906	. GROMMET 201-0020-000	1	
/1-5	MS21266-3N	96906	. PLASTIC CHANNEL 150-0177-000	AR	
	656-7031-001		. BRACKET, PANEL STOP	1	
	MS51958-60	96906	. SCREW 343-0225-000 (AP)	3	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	3	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	3	
/1-6	FPN10-32SCL	83324	. . PRESS NUT CD PL STL, 10-32 334-1154-000	2	
/1-7	656-7031-002		. . ANGLE	1	
/2-8	150-0708-030		. CLAMP, CABLE	1	
	MS51958-63	96906	. SCREW 343-0228-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	1	
/2-9	MS27212-1-9	96906	. TERMINAL BOARD 367-0808-090	1	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	2	
	NAS620C4L	80205	. WASHER 310-0740-200 (AP)	2	
	656-7164-001		. BRACKET, TERMINAL BOARD MOUNTING	1	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	3	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	3	
/2-10	FPN10-32SCL	83324	. . PRESS NUT CD PL STL, 10-32 334-1154-000	2	
/2-11	FPN4-40SCL	83324	. . PRESS NUT CD PL STL, 4-40 334-1151-000	2	
/2-12	656-7164-002		. . BRACKET	1	
/2-13	656-7236-001		. NUT, JUNCTION FITTING	4	
/2-14	656-7130-001		. COVER, ENCLOSURE	2	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	12	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	12	
	MS51957-81	96906	. SCREW 343-0267-000 (AP)	2	
	656-7203-001		. GASKET, POWER SUPPLY ENCLOSURE	1	
/2-15	677-3010	57003	. . GASKET,RFI 018-0260-010	3	
/2-16	656-7083-001		. BRACKET, POWER SUPPLY MOUNTING	2	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	4	
/2-17	LCDA11	80103	. POWER SUPPLY,DC 270-0126-090	2	
	MS51959-42	96906	. SCREW 342-0077-000 (AP)	4	
/2-18	656-7084-002		. ENCLOSURE, POWER SUPPLY	1	
	MS51960-64	96906	. SCREW 342-0223-000 (AP)	4	
/2-19	656-7084-001		. ENCLOSURE, POWER SUPPLY	1	
	MS51960-64	96906	. SCREW 342-0223-000 (AP)	4	
/2-20	150-0708-020		. CLAMP, CABLE	4	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
/2-21	MS51958-64	96906	. SCREW 343-0229-000	4	
/2-22	MS15795-808	96906	. WASHER 310-0779-080	4	
/2-23	MS21044C3	96906	. NUT 333-1302-000	4	
/2-24	150-0708-030		. CLAMP, CABLE	2	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	1	
/2-25	MS27212-1-9	96906	. TERMINAL BOARD 367-0808-090	3	
	MS51957-16	96906	. SCREW 343-0136-000 (AP)	2	
	NAS620C4L	80205	. WASHER 310-0740-200 (AP)	2	
/2-26	150-0708-060		. CLAMP, CABLE	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	1	
/2-26A	MS25281R13	96906	. CLAMP 150-0708-120	3	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	1	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
10 /2-27	656-9045-001		. CLIP, RETAINER- VOLTAGE MONITOR	3	
	MS51957-35	96906	. SCREW 343-0178-000 (AP)	6	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	6	
/2-27A	MS25281R2	96906	. CLAMP 150-0708-010.	2	
/2-28	268	51741	. MONITOR, POWER.	3	
/2-29	220-1402-010		. SOCKET, RELAY	3	
/2-30	F02A250V1-4AS	81349	. FUSE 264-4020-000	3	
/2-31	F02A250V5AS	81349	. FUSE 264-4090-000	3	
/2-32	FH22HM	81349	. FUSEHOLDER 265-1265-060	1	
	MS51959-31	96906	. SCREW 342-0065-000 (AP)	2	
/1-33	656-7002-001		. BAR, GROUND	1	
	MS51957-81	96906	. SCREW 343-0267-000 (AP)	2	
	AN961-416T	88044	. WASHER 310-0751-050 (AP).	2	
/1-34	MS17830-4C	96906	. NUT 333-0428-000.	1	
/1-35	AN961-416T	88044	. WASHER 310-0751-050	2	
/1-36	MS25036-120	96906	. TERMINAL 304-0749-000	1	
/1-37	P313-0148-000	77250	. NUT,PLAIN,HEX NP BRS, 1/4-20 313-0148-000	1	
/1-38	P312-0259-000	77250	. STUD,CONT THD BRS, 1/4-20 X 1-1/4 312-0259-000.	1	
/1-39	260-1055-010		. BREAKER, CIRCUIT.	1	
	P342-0242-000	77250	. SCREW,MACH NP BRS, 1/4-20 X 5/8 342-0242-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	4	
	MS21044C3	96906	. NUT 333-1302-000.	4	
/2-40	1221	74545	. SWITCH,TGL 266-5033-010	1	
	MS51959-28	96906	. SCREW 342-0062-000 (AP)	2	
/1-41	150-0708-100		. CLAMP, CABLE.	2	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	1	
/1-42	MS25281R5	96906	. CLAMP 150-0708-040.	1	
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	MS15795-808	96906	. WASHER 310-0779-080 (AP).	1	
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	MS15795-808	96906	. WASHER 310-0779-080 (AP).	1	
/1-45	656-7045-001		. PANEL, MAIN POWER	1	
	MS51958-60	96906	. SCREW 343-0225-000 (AP)	6	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	6	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	6	
/3-46	656-9054-001		. COVER, FILTERS, POWER ENTRY	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	4	
/3-47	MS25281R2	96906	. CLAMP 150-0708-010.	2	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	1	
/3-48	MS25281R7	96906	. CLAMP 150-0708-060.	2	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	1	
/1-49	MS17830-4C	96906	. NUT 333-0428-000.	2	
/1-50	AN961-416T	88044	. WASHER 310-0751-050	4	
/1-51	P313-0148-000	77250	. NUT,PLAIN,HEX NP BRS, 1/4-20 313-0148-000	2	
/1-52	P312-0262-000	77250	. STUD,CONT THD BRS, 1/4-20 X 2 312-0262-000.	1	
/3-53	5JX94	56289	. FILTER,RAD INTR 241-0430-000.	3	
/3-54	M15733-02-0006	81349	. FILTER 241-0722-060	4	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	3	
/3-54A	MS15795-808	96906	. WASHER 310-0779-080	3	
/3-55	MS25281R8	96906	. CLAMP 150-0708-070.	3	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	1	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
10	MS15795-808	96906	. WASHER 310-0779-080 (AP)	1	
/3-56	1250-02	23663	. ARRESTOR,LIGHTING 013-1638-010	2	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
/3-56A	1250-02	23663	. ARRESTOR,LIGHTING 013-1638-010	1	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
	346-0255-001		. SCREW	2	
/3-56B	656-8750-001		. ADAPTER, ARRESTOR	1	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
/3-57	5110C	12670	. TRANSFORMER, CURRENT	3	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	4	
/4-58	MS35489-35	96906	. GROMMET 201-0020-000	1	
/4-59	MS25281R13	96906	. CLAMP 150-0708-120	2	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	1	
/4-60	MS21266-3N	96906	. PLASTIC CHANNEL 150-0177-000	AR	
/4-61	656-7225-001		. PIN, ALIGNMENT-ECCENTRIC (ALTERED FROM P/N 015-4083-020 MFG BY 29372)	1	
/4-62	656-7003-001		. KNOB, MOD (ALTERED FROM P/N 015-4082-010 MFG BY 99862)	1	
/4-63	AN961-416T	88044	. WASHER 310-0751-050	1	
/4-64	656-7008-001		. CLAMP, RETAINER	1	
/4-65	MS16562-229	96906	. PIN 311-0394-000 (RIGHT SIDE AND LEFT SIDE)	2	
-66	656-8758-001		. EYEBOLT, PLATED	4	
/4-67	656-7021-001		. COVER, POWER ENTRY TOP	1	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	16	
	MS15795-805	96906	. WASHER 310-0779-050 (AP)	16	
/4-68	656-7180-001		. GASKET, POWER ENTRY -COVER (ALTERED FROM P/N 018-0260-010 MFG BY 57003)	1	
/4-69	656-7003-001		. KNOB, MOD (ALTERED FROM P/N 015-4082-010 MFG BY 99862)	1	
/4-70	AN961-416T	88044	. WASHER 310-0751-050	1	
/4-71	656-7008-001		. CLAMP, RETAINER	1	
/4-72	MS16562-229	96906	. PIN 311-0394-000 (RIGHT SIDE AND LEFT SIDE)	2	
/4-73	CL-26-EB	99862	. BOLT,EYE 330-2037-010	1	
/4-74	656-7225-010		. PIN, ALIGNMENT ECCENTRIC (ALTERED FROM P/N 015-4083-020 MFG BY 29372)	2	
	656-7074-001		. PLATE, ADAPTER-SLIDE MOUNT	1	
/4-75	NCN8-1-4	07886	. . NUT,CAPTIVE SST, 8-32 334-0432-000	2	
/4-76	MS20470AD4-7	96906	. . RIVET 305-1172-000	3	
/4-77	656-7074-005		. . BAR	1	
/4-78	656-7074-003		. . PLATE	1	
/4-79	5705-14	83508	. SLIDE, CHASSIS LEFT SIDE	1	
	MS51957-44	96906	. SCREW 343-0188-000 (AP)	4	
	MS51957-40	96906	. SCREW 343-0184-000 (AP)	2	
/4-80	MS16997-61	96906	. SCREW 324-2638-000	1	
/4-81	MS35338-139	96906	. WASHER 310-0288-000	1	
/4-82	NAS620C416	80205	. WASHER 310-0740-640	1	
/4-83	CA-4017-4	29372	. PIN,ALIGNMENT 015-4083-010	1	
/4-84	656-7022-001		. COVER, POWER ENTRY- BOTTOM	1	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	14	
	MS15795-805	96906	. WASHER 310-0779-050	14	
/4-85	656-7181-001		. GASKET, POWER ENTRY-COVER	1	
/1-86	656-7225-010		. PIN, ALIGNMENT ECCENTRIC (ALTERED FROM P/N 015-4083 020 MFG BY 29372)	2	
/1-86A	662R1-1X1-4CDPL	76786	. LOOP,STRAP FSTN 015-1255-000	1	
	MS51960-64	96906	. SCREW 342-0223-000 (AP)	2	
/1-86B	656-8733-001		. BRACKET, TIE DOWN	1	
	MS51958-63	96906	. SCREW 343-0228-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
10 /1-87	656-7003-001		. KNOB, MOD (ALTERED FROM P/N 015-4082-010 MFG BY 99862)	2	
/1-88	AN961-416T	88044	. WASHER 310-0751-050	2	
/1-89	656-7008-001		. CLAMP, RETAINER	2	
/1-90	MS16562-223	96906	. PIN 311-0385-000	1	
/1-91	CL-26-EB	99862	. BOLT,EYE 330-2037-010	1	
/1-92	656-7074-002		. PLATE, ADAPTER-SLIDE MOUNT	1	
/1-93	NCN8-1-4	07886	. . NUT,CAPTIVE SST, 8-32 334-0432-000	2	
/1-94	MS20470AD4-7	96906	. . RIVET 305-1172-000	3	
/1-95	656-7074-005		. . BAR	1	
/1-96	656-7074-004		. . PLATE	1	
/1-96A	656-7050-002		. PLATE, ADAPTER	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	4	
/1-97	126-5194-002		. SLIDE, CHASSIS RIGHT SIDE	1	
	MS51957-44	96906	. SCREW 343-0188-000 (AP)	4	
	MS15795-807	96906	. WASHER 310-0779-070 (AP)	4	
	MS21044C08	96906	. NUT 333-1301-000 (AP)	4	
	MS51957-40	96906	. SCREW 343-0184-000 (AP)	2	
/1-98	MS16997-61	96906	. SCREW 324-2638-000	1	
/1-99	MS35338-139	96906	. WASHER 310-0288-000	1	
/1-100	NAS620C416	80205	. WASHER 310-0740-640	1	
/1-101	CA-4017-4	29372	. PIN,ALIGNMENT 015-4083-010	1	
/1-102	730TW10C2-9-0	92607	. WIRE,ELEC 422-1349-000	AR	
/1-103	MS25036-106	96906	. TERMINAL 304-1265-000	2	
/2-104	656-7071-001		. CABLE ASSEMBLY, POWER W007	1	
/5-105	656-7261-002		. . CONDUIT, BREEZE	1	
/5-106	152-0077-040	85480	. . LABEL,CA MKR	3	
/2-107	656-7054-001		. CABLE ASSEMBLY, POWER W003	1	
/5-108	656-7261-001		. . CONDUIT, BREEZE	1	
/5-109	152-0077-040	85480	. . LABEL,CA MKR	3	
/2-110	656-7070-001		. CABLE ASSEMBLY, POWER W008	1	
/5-111	656-7260-002		. . CONDUIT, BREEZE	1	
/5-112	152-0077-040	85480	. . LABEL,CA MKR	3	
/5-113	MS3106E14S2PY	96906	. . CONNECTOR 357-5198-000	1	
/5-114	01308-15	81774	. . CABLE,POWER,ELEC 424-0040-000	AR	
/5-115	656-7055-001		. CABLE ASSEMBLY, POWER W004	1	
/5-116	656-7260-001		. . CONDUIT, BREEZE	1	
/5-117	152-0077-040	85480	. . LABEL,CA MKR	3	
/5-118	MS3106E14S2PY	96906	. . CONNECTOR 357-5198-000	1	
/5-119	01308-15	81774	. . CABLE,POWER,ELEC 424-0040-000	AR	
/5-120	656-7057-001		. CABLE ASSEMBLY, POWER W009	1	
/5-121	152-0077-020	85480	. . LABEL,CA MKR	3	
/5-122	MS25036-101	96906	. . TERMINAL 304-0127-000	6	
/5-123	01308-15	81774	. . CABLE,POWER,ELEC 424-0040-000	AR	
/5-124	656-7056-001		. CABLE ASSEMBLY, POWER W005	1	
/5-125	152-0077-020	85480	. . LABEL,CA MKR	3	
/5-126	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/5-127	MS3116F8-4S	96906	. . CONNECTOR 371-6532-000	1	
/5-128	EC22U0-4-5SF	81349	. . CABLE 424-0101-010	AR	
/5-129	656-7069-001		. CABLE ASSEMBLY, POWER W006	1	
/5-130	152-0077-020	85480	. . LABEL,CA MKR	3	
/5-131	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/5-132	MS3116F8-4S	96906	. . CONNECTOR 371-6532-000	1	
/5-133	EC22U0-4-5SF	81349	. . CABLE 424-0101-010	AR	
/5-134	656-7117-001		. CABLE ASSEMBLY, SIGNAL W207	1	
/6-135	152-0077-020	85480	. . LABEL,CA MKR	3	
/6-136	262-103	83330	. . PLUG,TIP 361-0081-000	2	
/6-137	262-102	83330	. . PLUG,TIP 361-0082-000	1	
/6-138	MS3106E14S7P	96906	. . CONNECTOR 357-4592-010	1	
/6-139	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
10 /6-140	656-7118-001		. CABLE ASSEMBLY, SIGNAL W206	1	
/6-141	152-0077-020	85480	. . LABEL,CA MKR.	3	
/6-142	262-103	83330	. . PLUG,TIP 361-0081-000	1	
/6-143	262-102	83330	. . PLUG,TIP 361-0082-000	3	
/6-144	MS3106E14S2P	96906	. . CONNECTOR 357-5196-000.	1	
/6-145	EC22U0-4-5SF	81349	. . CABLE 424-0101-010.	AR	
/6-146	656-7119-001		. CABLE ASSEMBLY, SIGNAL W205	1	
/6-147	152-0077-040	85480	. . LABEL,CA MKR.	3	
/6-148	MS3106E14S-2SX	96906	. . CONNECTOR 357-4598-010.	1	
/6-149	PT06E10-98SSR	77820	. . CONNECTOR,PLUG ELEC 371-8406-010.	1	
/6-150	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	
/6-151	656-7228-001		. . CONDUIT ASSEMBLY.	1	
/6-152	656-7120-001		. CABLE ASSEMBLY, SIGNAL W204	1	
/6-153	152-0077-040	85480	. . LABEL,CA MKR.	3	
/6-154	PT06E10-98PSR	77820	. . CONNECTOR,PLUG ELEC 371-8405-010.	1	
/6-155	MS3106E14S-5P	96906	. . CONNECTOR 357-5331-010.	1	
/6-156	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	
/6-157	656-7231-001		. . CONDUIT ASSEMBLY.	1	
/7-158	656-7114-001		. CABLE ASSEMBLY, SIGNAL W210	1	
/7-159	152-0077-040	85480	. . LABEL,CA MKR.	3	
/7-160	PT06E10-98PWSR	77820	. . CONNECTOR,PLUG ELEC 371-8405-020.	1	
/7-161	MS3106E16S-1S	96906	. . CONNECTOR 357-4598-030.	1	
/7-162	EC22U0-4-5SF	81349	. . CABLE 424-0101-010.	AR	
/7-163	656-7198-001		. . CONDUIT, CABLE.	1	
/7-164	656-7116-001		. CABLE ASSEMBLY, SIGNAL W208	1	
/7-165	152-0077-020	85480	. . LABEL,CA MKR.	3	
/7-166	MS3110E14-19P	96906	. . CONNECTOR 371-8388-260.	1	
/7-167	EC22U0-4-5SF	81349	. . CABLE 424-0101-010.	AR	
/7-168	656-7121-001		. CABLE ASSEMBLY, SIGNAL W203	1	
/7-169	152-0077-040	85480	. . LABEL,CA MKR.	3	
/7-170	MS3116F14-19P	96906	. . CONNECTOR 371-6570-000.	1	
/7-171	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	
/7-172	656-7229-001		. . CONDUIT ASSEMBLY.	1	

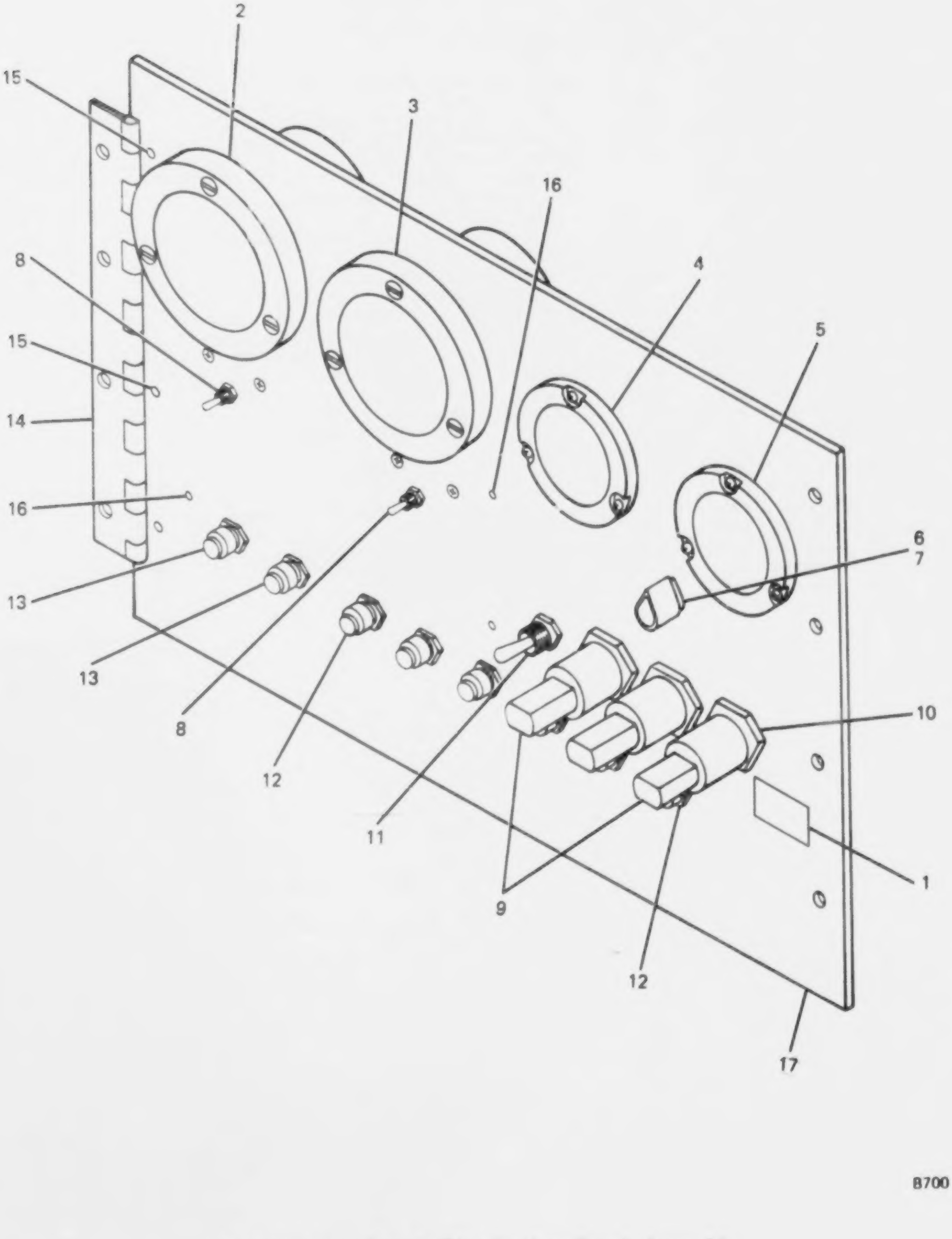
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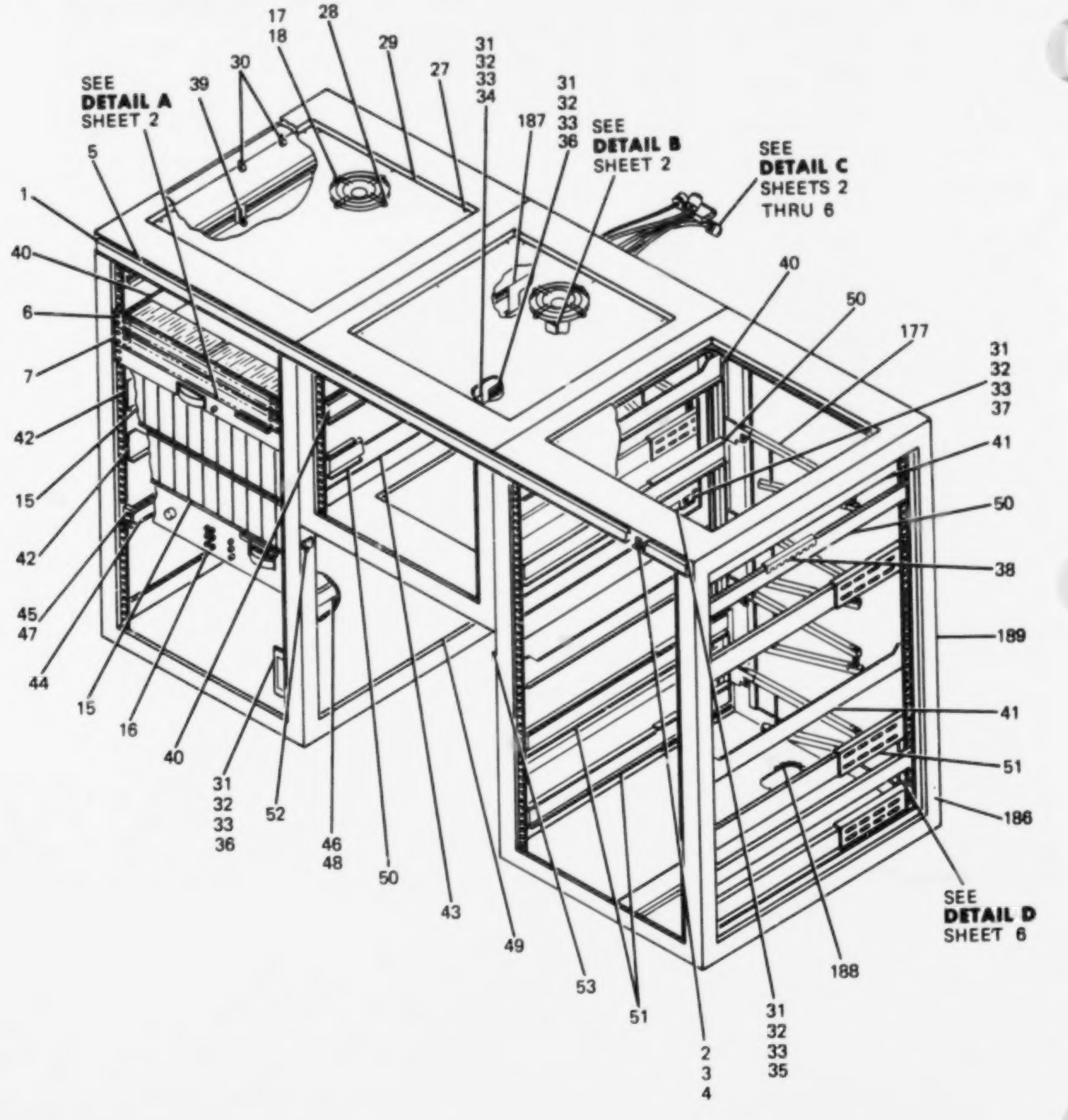
Figure 6-11. Power Distribution Panel Assembly

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
11	656-7247-001		PANEL ASSEMBLY, POWER DISTRIBUTION (SEE FIGURE 10 FOR NHA)	REF	
-1	280-1368-060	12998	. LABEL,PRESSURE SENS	1	
-2	30FHXX	31356	. METER,ELEC 457-0001-010	1	
-3	33FHXX	31356	. METER,ELEC 457-0001-020	1	
-4	522-4101-004	65092	. VOLTMETER	1	
-5	261030	65092	. AMMETER-AC 479-0004-010	1	
-6	MS91528-1K2B	96906	. KNOB 281-0152-000	1	
-7	259-2753-020	81349	. SWITCH.	1	
-8	M39019-5-255	81349	. CIRCUIT BREAKER 260-0970-270.	2	
	MS51957-27	96906	. SCREW 343-0168-000 (AP)	4	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	4	
-9	F02A250V3AS	81349	. FUSE 264-4080-000	3	
-10	FHL17G1	81349	. FUSEHOLDER 265-1221-000	3	
-11	MS27735-23	96906	. SWITCH 266-5414-110	1	
-12	MS24510A5	96906	. CIRCUIT BREAKER 260-3082-000.	7	
-13	MS24510A10	96906	. CIRCUIT BREAKER 260-3084-000.	1	
	656-7067-001		. HINGE	1	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	4	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	4	
-14	MS20257-5-7200	96906	. . HINGE 015-3023-050.	1	
	656-7063-001		. PANEL, POWER DISTRIBUTION	1	
-15	FHS1032-10	46384	. . STUD,CAPTIVE SST, 10-32 X 5/8 330-2815-000.	4	
-16	FHS1032-12	46384	. . STUD,CAPTIVE SST, 10-32 X 3/4 330-2816-000.	4	
-17	656-7063-002		. . PANEL	1	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SEE
DETAIL B
SHEET 2
SEE
DETAIL C
SHEETS 2
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DETAIL D
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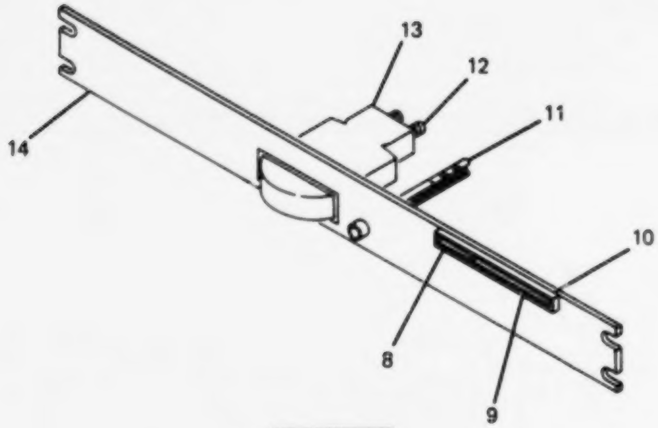
Figure 6-12. Three Bay Rack Assembly (Sheet 1 of 6)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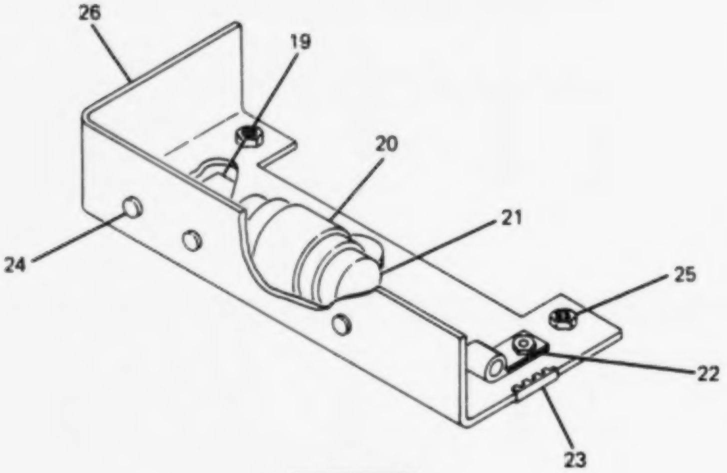
DETAIL A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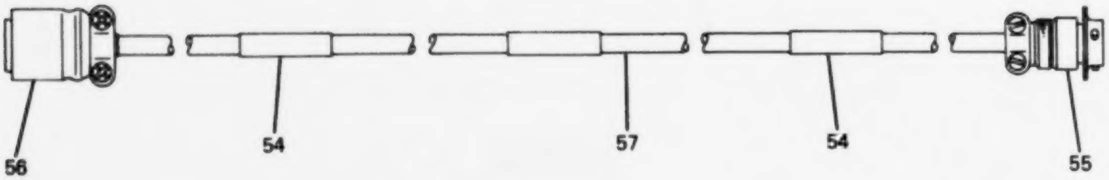
DETAIL B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DETAIL C

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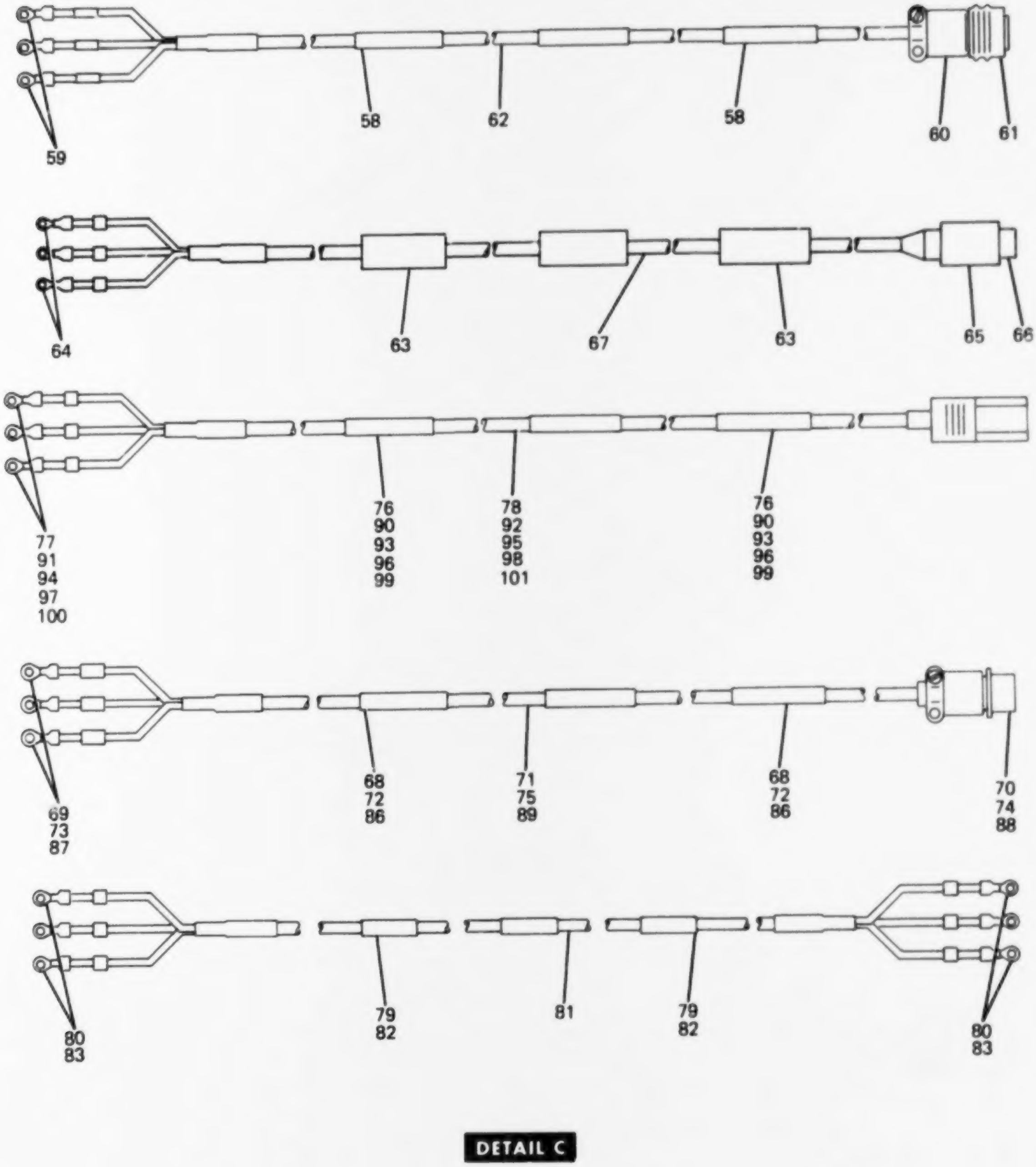
Figure 6-12. Three Bay Rack Assembly (Sheet 2 of 6)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DETAIL C

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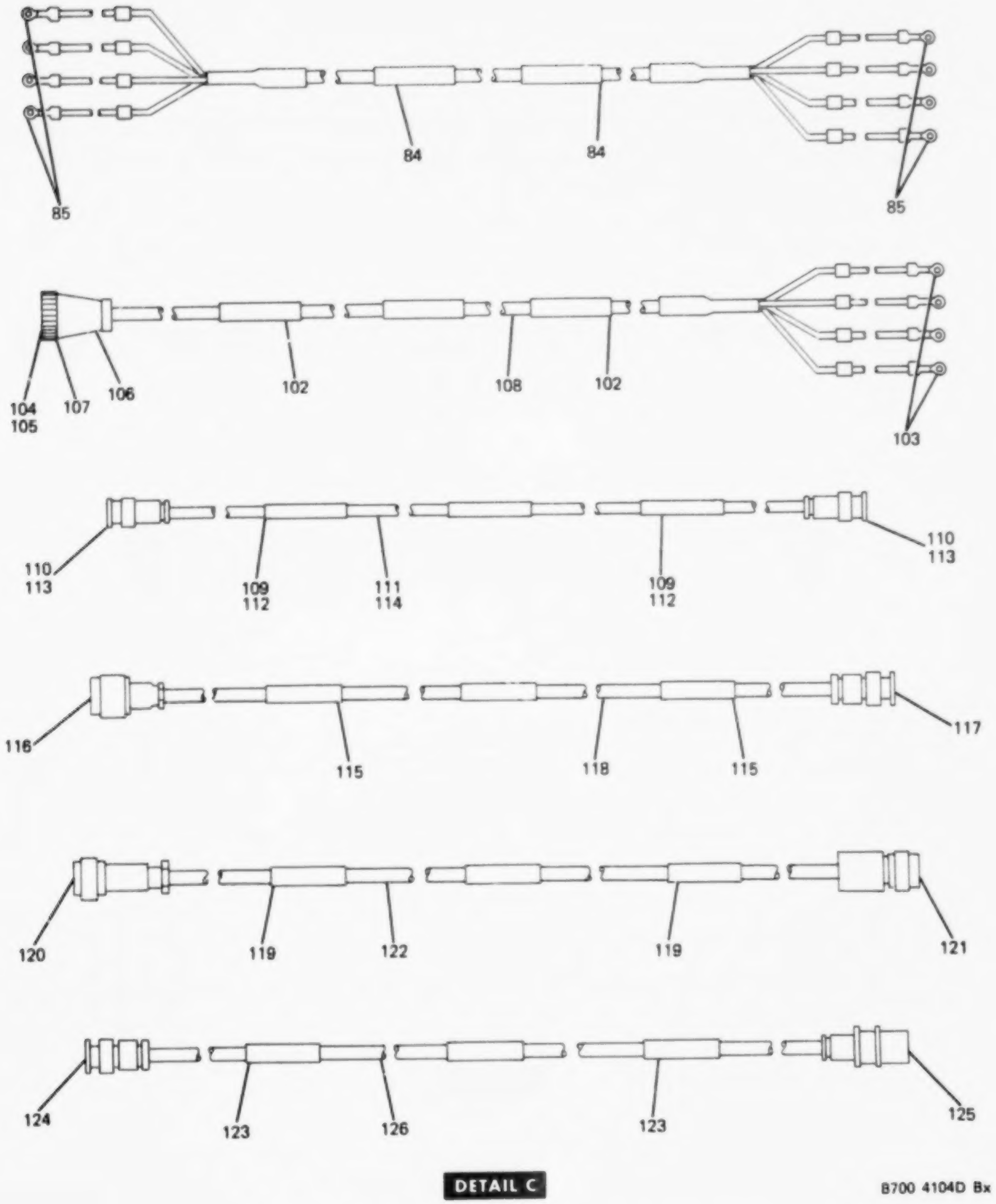
Figure 6-12. Three Bay Rack Assembly (Sheet 3 of 6)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DETAIL C
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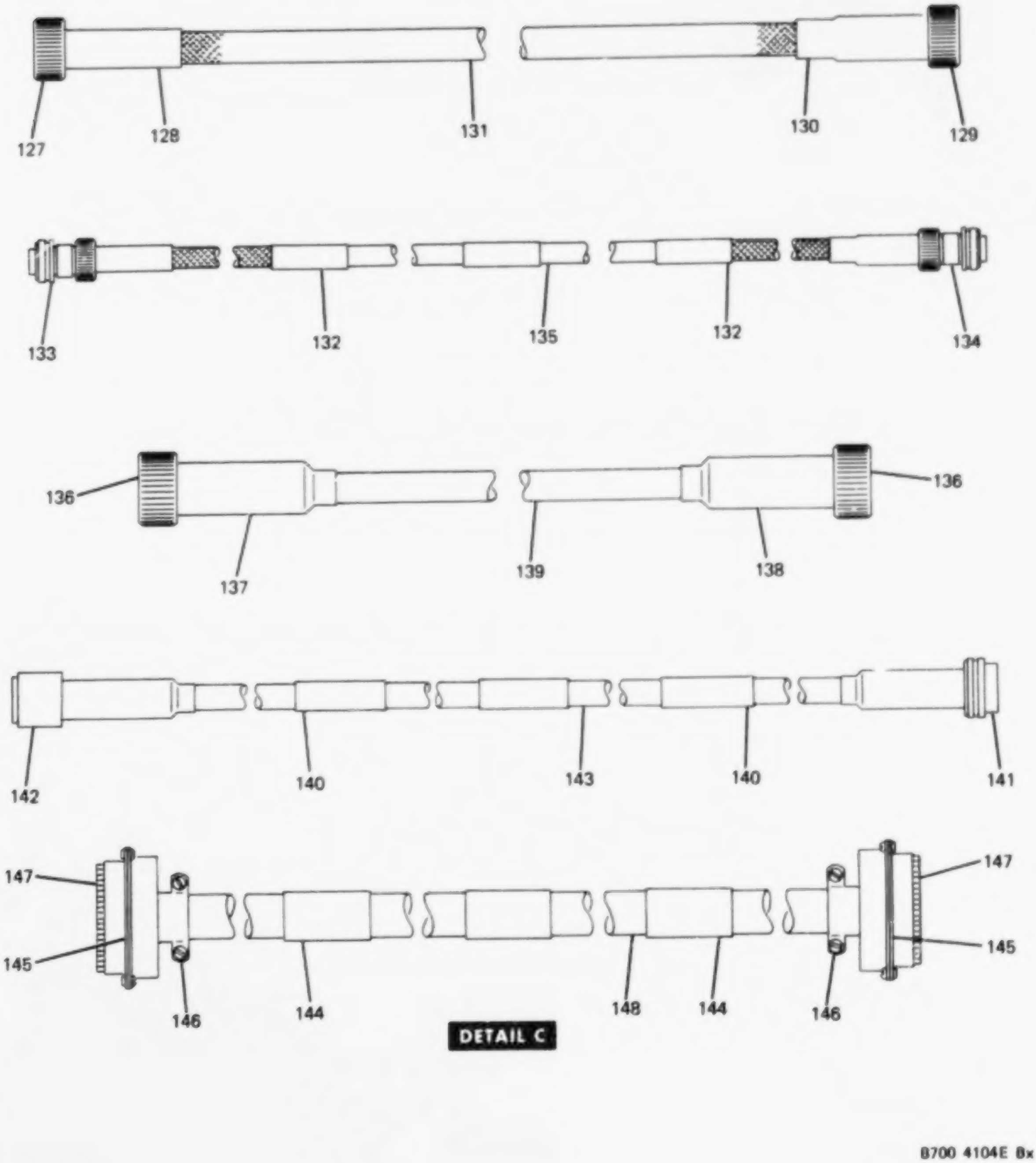
Figure 6-12. Three Bay Rack Assembly (Sheet 4 of 6)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DETAIL C
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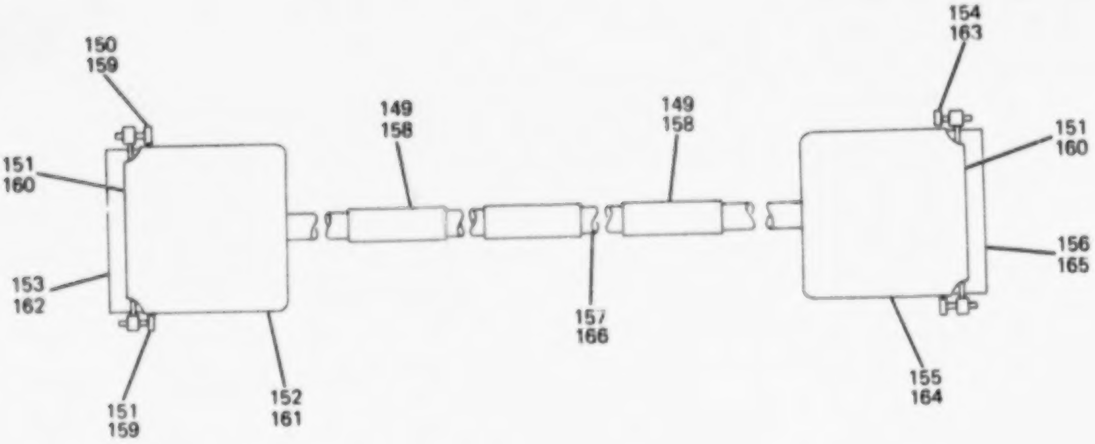
Figure 6-12. Three Bay Rack Assembly (Sheet 5 of 6)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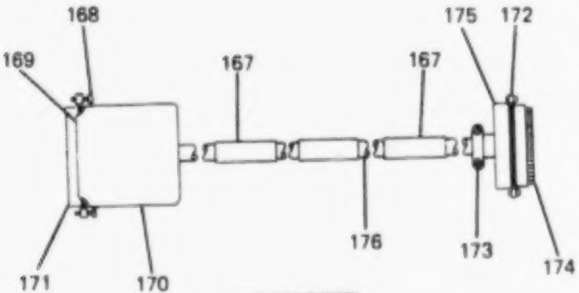
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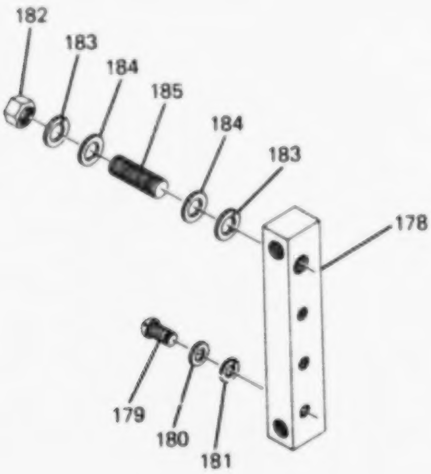
DETAIL C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DETAIL D

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Figure 6-12. Three Bay Rack Assembly (Sheet 6 of 6)

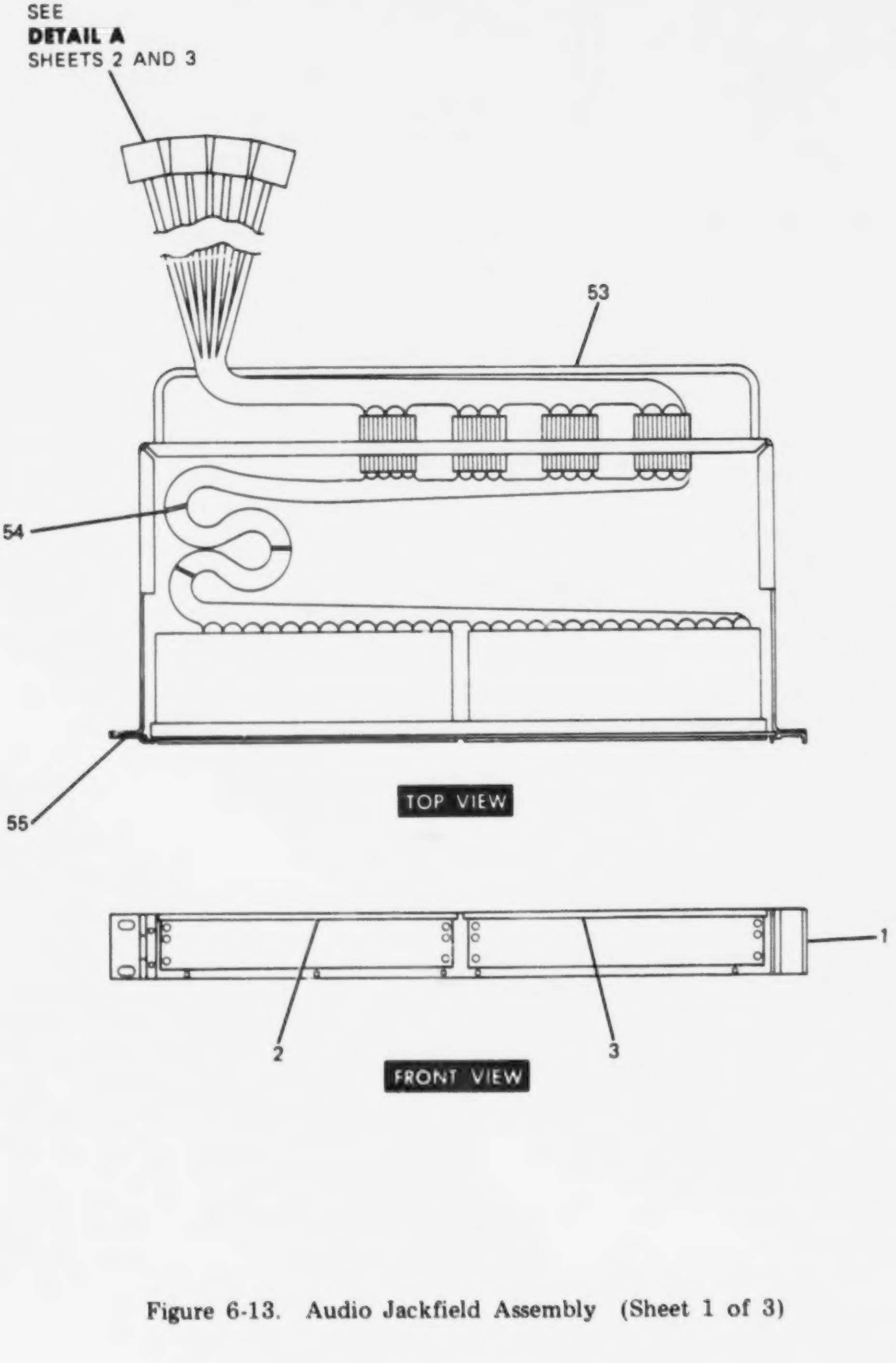
FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
12	656-6890-001		RACK ASSEMBLY, THREE BAY (SEE FIGURE 6 FOR NHA) . .	REF	
	656-6979-001		. STRIP ASSEMBLY, IDENTIFICATION.	1	
	MS51958-63	96906	. SCREW 343-0228-000 (AP)	5	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	5	
/1-1	656-6976-001		. . BRACKET, TRIM MOUNTING.	5	
	MS51959-17	96906	. . SCREW 342-0048-000 (AP)	5	
	NAS620C4L	80205	. . WASHER 310-0740-200 (AP).	5	
	MS35338-135	96906	. . WASHER 310-0279-000 (AP).	5	
	P313-0132-000	77250	. . NUT,PLAIN,HEX SST, 4-40 313-0132-000 (AP) . . .	5	
/1-2	MS20426AD3-6	96906	. . . RIVET 305-1364-000.	2	
/1-3	NAS1068A3	80205	. . . NUT 333-0890-000.	1	
/1-4	656-6976-002		. . . BRACKET	1	
/1-5	656-6978-001		. . STRIP, COPORATE IDENTITY.	1	
/1-6	656-8708-001		. JACKFIELD ASSEMBLY AUDIO (SEE FIGURE 13 FOR . . . BREAKDOWN)	1	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	4	
	NAS620C10L	80205	. WASHER 310-0740-520 (AP).	4	
/1-7	656-8709-001		. JACKFIELD ASSEMBLY, DC (SEE FIGURE 14 FOR . . . . BREAKDOWN)	1	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	4	
	NAS620C10L	80205	. WASHER 310-0740-520 (AP).	4	
	656-6903-001		. PANEL, VOLTMETER.	1	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	4	
	NAS620C10L	80205	. WASHER 310-0740-520 (AP).	4	
/2-8	623-9008-001		. . INSERT, HOUSEMARK	1	
/2-9	656-6974-001		. . INSERT, PRODUCT	1	
/2-10	632-5201-001		. . HOLDER, PRODUCT	1	
	MS51959-16	96906	. . SCREW 342-0047-000 (AP)	2	
	MS15795-803	96906	. . WASHER 310-0779-030 (AP).	2	
	MS35338-135	96906	. . WASHER 310-0279-000 (AP).	2	
	P313-0132-000	77250	. . NUT,PLAIN,HEX SST, 4-40 313-0132-000 (AP) . . .	2	
/2-11	PJ838	70674	. . JACK,TEL 360-0388-000	1	
	MS51957-15	96906	. . SCREW 343-0135-000 (AP)	1	
	MS15795-803	96906	. . WASHER 310-0779-030 (AP).	1	
	P313-0132-000	77250	. NUT,PLAIN,HEX SST, 4-40 313-0132-000 (AP)	1	
/2-12	MS25036-149	96906	. TERMINAL 304-0243-000	2	
/2-13	A739	65092	. . METER, VOLT	1	
/2-14	656-6971-001		. . PANEL, VOLTMETER.	1	
/1-15	656-6985-001		. SHELF ASSEMBLY, KEYER/CONVERTER (SEE FIGURE 15 . FOR BREAKDOWN)	2	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	4	
	NAS620C10L	80205	. WASHER 310-0740-520 (AP).	4	
/1-16	656-6899-001		. PANEL ASSEMBLY, SECURE PATCH (SEF FIGURE 16 . . . FOR BREAKDOWN)	1	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	8	
	NAS620C10L	80205	. WASHER 310-0740-520 (AP).	8	
/1-17	476042	82877	. GUARD,FINGER 009-1766-050	3	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	12	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	24	
/1-18	026982	82877	. FAN,TUBEAXIAL 009-0264-010.	3	
	656-8687-001		. GUARD ASSEMBLY, BLOWER.	3	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	6	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	6	
	MS21044C06	96906	. NUT 333-1300-000 (AP)	6	
/2-19	280-1368-010	12998	. . LABEL,PRESSURE SENS	1	
/2-20	MS25281R10	96906	. . CLAMP 150-0708-090.	1	
	MS51958-64	96906	. . SCREW 343-0229-000 (AP)	1	
	MS15795-808	96906	. . WASHER 310-0779-080 (AP).	1	
	MS35338-138	96906	. . WASHER 310-0284-000 (AP).	1	
	310-0019-000	79807	. . WASHER,PLAIN LEAD, 17/64 ID X 11/16 OD (AP) . .	1	
/2-21	CR30-660	84411	. . CAPACITOR,FIXED PLSTC DIEL, 0.27UF, 10%, . . . 400V 933-1043-660	1	
/2-22	MS25281R2	96906	. . CLAMP 150-0708-010.	1	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
12	MS51958-64	96906	. . SCREW 343-0229-000 (AP)	1	
	MS15795-808	96906	. . WASHER 310-0779-080 (AP).	1	
	MS35338-138	96906	. . WASHER 310-0284-000 (AP).	1	
	310-0019-000	79807	. . WASHER,PLAIN LEAD, 17/64 ID X 11/16 OD (AP)	1	
/2-23	656-8700-001		. . GUARD, BLOWER	1	
/2-24	SL439-433WHT	12615	. . . TERMINAL,STDF 306-1521-000.	3	
/2-25	M45938-4-5	81349	. . . NUT 334-1476-000.	2	
/2-26	656-8700-002		. . . GUARD	1	
	656-7001-001		. COVER, CABINET-TOP.	3	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	12	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	12	
/1-27	22NCFMA1-1032	27601	. . NUT,SLFLKG,CLINCH CD PL STL, 10-32 333-0845-000 (AP)	12	
/1-28	M45938/5-5	81349	. . NUT 333-0841-000.	4	
/1-29	656-7001-002		. . COVER	1	
/1-30	TY37	59730	. CLAMP,LOOP 435-1106-000	24	
	MS51958-66	96906	. SCREW 343-0230-000 (AP)	24	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	24	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	24	
/1-31	280-1368-030	12998	. LABEL,PRESSURE SENS	5	
/1-32	MS18029-159	96906	. COVER ASSEMBLY 367-0809-090	5	
/1-33	MS27212-1-9	96906	. TERMINAL BOARD 367-0808-090	5	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	10	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	10	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	10	
	AHWX092-003219	85005	. NUT,CLIP STL, 10-32 021-0351-060 (AP)	10	
/1-34	656-7167-002		. PLATE, TB MOUNTING.	1	
/1-35	656-7167-004		. PLATE, TB MOUNTING.	1	
/1-36	656-7167-001		. PLATE, TB MOUNTING.	1	
/1-37	656-7167-003		. PLATE, TB MOUNTING.	1	
/1-38	MS21266-2N	96906	. PLASTIC CHANNEL 150-0175-000.	AR	
/1-39	656-9053-001		. PLATE, CABLE TIE.	1	
	P326-0010-000	77250	. SCREW,CAP,HEX CD PL STL, 1/4-20UNC-2A X 1-1/4 326-0010-000 (AP)	1	
	MS35338-139	96906	. WASHER 310-0288-000 (AP).	1	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	1	
/1-40	656-6994-004		. SUPPORT, CARDCAGE	4	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	8	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	8	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	16	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	16	
	AHWX092-003219	85005	. NUT,CLIP STL, 10-32 021-0351-060 (AP)	8	
/1-41	656-6994-003		. SUPPORT, CARDCAGE	4	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	8	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	8	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	16	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	16	
	AHWX092-003219	85005	. NUT,CLIP STL, 10-32 021-0351-060 (AP)	8	
/1-42	656-6994-002		. SUPPORT, CARDCAGE	2	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	8	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	8	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	8	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	8	
	AHWX092-003219	85005	. NUT,CLIP STL, 10-32 021-0351-060 (AP)	4	
/1-43	656-6994-001		. SUPPORT, CARDCAGE	2	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	4	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	8	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	8	
	AHWX092-003219	85005	. NUT,CLIP STL, 10-32 021-0351-060 (AP)	4	
/1-44	5701-24	83508	. SLIDE	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	8	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
12	MS21044C3	96906	. NUT 333-1302-000 (AP)	4	
/1-45	656-6991-001		. BRACKET, SLIDE MOUNTING, RIGHT FRONT	1	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
/1-46	656-6991-002		. BRACKET, SLIDE MOUNTING, LEFT FRONT	1	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
/1-47	656-6960-001		. BRACKET, SLIDE MOUNTING REAR	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	AHWX092-003219	85005	. NUT,CLIP STL, 10-32 021-0351-060 (AP)	2	
/1-48	656-6960-002		. BRACKET, SLIDE MOUNTING, RIGHT REAR	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	2	
	AHWX092-003219	85005	. NUT,CLIP STL, 10-32 021-0351-060 (AP)	2	
/1-49	656-7000-001		. COVER, CABINET SIDE	2	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	6	
	MS15795-805	96906	. WASHER 310-0779-050 (AP)	12	
	MS21044C06	96906	. NUT 333-1300-000 (AP)	6	
/1-50	622-3493-001		. SLIDE, RECEIVER/ EXCITER	2	
	MS51958-60	96906	. SCREW 343-0225-000 (AP)	4	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	4	
/1-51	622-3418-001		. SLIDE, PRESELECTOR	2	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	4	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP)	4	
	AHWX092-003219	85005	NUT,CLIP STL, 10-32 021-0351-060 (AP)	2	
/1-52	656-6913-001		. GUIDE, SHELF LEAF, LEFT	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	4	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	2	
/1-53	656-6913-002		. GUIDE, SHELF LEAF, RIGHT	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP)	4	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	2	
	656-7058-001		. CABLE ASSEMBLY, POWR	1	
/2-54	152-0077-040	85480	. . LABEL	3	
/2-55	JT01RE-12-98PSR	77820	. . CONNECTOR	1	
/2-56	MS3116F14-12S	96906	. . CONNECTOR 371-8372-060	1	
/2-57	656-7059-001		. CABLE ASSEMBLY, POWER	1	
/3-58	152-0077-020	85480	. . LABEL,CA MKR	3	
/3-59	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-60	MS27506F12-2	96906	. . ADAPTER 359-0637-030	1	
/3-61	MS27484T12F98S	96906	. . CONNECTOR 359-0645-380	1	
/3-62	656-7087-001		. CABLE ASSEMBLY, POWER	1	
/3-63	152-0077-040	85480	. . LABEL,CA MKR	3	
/3-64	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-65	MS3057-6A	96906	. . ADAPTER 357-8445-000	1	
/3-66	MS3106A14S7S	96906	. . CONNECTOR 357-4013-000	1	
/3-67	656-7085-001		. CABLE ASSEMBLY, POWER	1	
/3-68	152-0077-040	85480	. . LABEL,CA MKR	3	
/3-69	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-70	MS3116F12-3S	96906	. . CONNECTOR 371-8251-000	1	
/3-71	01308-15	81774	. . CABLE,POWER,ELEC 424-0040-000	1	
	656-7086-001		. CABLE ASSEMBLY, POWER	1	
/3-72	152-0077-040	85480	. . LABEL,CA MKR	3	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
12 /3-73	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-74	MS3116F12-3S	96906	. . CONNECTOR 371-8251-000	1	
/3-75	656-7088-001		. CABLE ASSEMBLY, POWER	1	
/3-76	152-0077-040	85480	. . LABEL,CA MKR.	3	
/3-77	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-78	656-7089-001		. CABLE ASSEMBLY, POWER	1	
/3-79	152-0077-040	85480	. . LABEL,CA MKR.	3	
/3-80	MS25036-101	96906	. . TERMINAL 304-0127-000	6	
/3-81	656-7090-001		. CABLE ASSEMBLY, POWER	1	
/3-82	152-0077-020	85480	. . LABEL,CA MKR.	3	
/3-83	MS25036-101	96906	. . TERMINAL 304-0127-000	6	
	656-7091-001		. CABLE ASSEMBLY, POWER	1	
/4-84	152-0077-040	85480	. . LABEL,CA MKR.	3	
/4-85	MS25036-101	96906	. . TERMINAL 304-0127-000	8	
	656-7275-001		. CABLE ASSEMBLY, POWER	1	
/3-86	152-0077-020	85480	. . LABEL,CA MKR.	3	
/3-87	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-88	MS3106F10SL3S	96906	. . CONNECTOR 357-4579-080	1	
/3-89	656-8682-001		. CABLE ASSEMBLY, POWER	1	
/3-90	152-0077-040	85480	. . LABEL,CA MKR.	3	
/3-91	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-92	656-8683-001		. CABLE ASSEMBLY, POWER	1	
/3-93	152-0077-040	85480	. . LABEL,CA MKR.	3	
/3-94	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-95	656-8684-001		. CABLE ASSEMBLY, POWER	1	
/3-96	152-0077-040	85480	. . LABEL,CA MKR.	3	
/3-97	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-98	656-8685-001		. CABLE ASSEMBLY, POWER	1	
/3-99	152-0077-040	85480	. . LABEL,CA MKR.	3	
/3-100	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-101	656-7276-001		. CABLE ASSEMBLY, POWER (ALTERED FROM 647-2547-002)	1	
/4-102	152-0077-040	85480	. . LABEL,CA MKR.	3	
/4-103	MS25036-111	96906	. . TERMINAL 304-1278-000	4	
/4-104	66101-4	00779	. . CONTACT,SOCKET ELEC 372-5932-130	2	
/4-105	66258-3	00779	. . CONNECTOR,CONTACT ELEC 372-0513-040	4	
/4-106	206138-1	00779	. . CABLE CLAMP,CONN ELEC 372-5932-110	1	
/4-107	207485-1	00779	. . CONNECTOR,PLUG ELEC 372-0513-020	1	
/4-108	656-7226-001		. CABLE ASSEMBLY, COAXIAL (ALTERED FROM 638-4634-004)	1	
/4-109	152-0077-020	85480	. . LABEL,CA MKR.	3	
/4-110	M39012-16-0101	81349	. . CONNECTOR 357-9292-000	2	
/4-111	656-7227-001		. CABLE ASSEMBLY, COAXIAL (ALTERED FROM 638-4634-004)	1	
/4-112	152-0077-020	85480	. . LABEL,CA MKR.	3	
/4-113	M39012-16-0101	81349	. . CONNECTOR 357-9292-000	2	
/4-114	656-7185-001		. CABLE ASSEMBLY, COAXIAL	1	
/4-115	152-0077-020	85480	. . LABEL,CA MKR.	3	
/4-116	101-N1100A	94375	. . CONNECTOR,PLUG ELEC 357-9519-000	1	
/4-117	M39012-16-0101	81349	. . CONNECTOR 357-9292-000	1	
/4-118	656-7188-001		. CABLE ASSEMBLY, COAXIAL	1	
/4-119	152-0077-040	85480	. . LABEL,CA MKR.	3	
/4-120	M39012-01-0005	81349	. . CONNECTOR 357-9326-000	1	
/4-121	M39012-06-0002	81349	. . CONNECTOR 357-0008-000	1	
/4-122	656-7187-001		. CABLE ASSEMBLY, COAXIAL	1	
/4-123	152-0077-040	85480	. . LABEL,CA MKR.	3	
/4-124	M39012-16-0101	81349	. . CONNECTOR 357-9292-000	1	
/4-125	KN-19-159	91836	. . CONNECTOR,RCPT ELEC 357-9692-000	1	
	656-7092-001		. CABLE ASSEMBLY, SIGNAL	1	
/4-126	656-7220-001		. . CONDUIT ASSEMBLY, CABLE	1	
/5-127	656-7036-001		. . . NUT, BACKSHELL	1	
/5-128	656-7034-002		. . . BACKSHELL, STRAIGHT	1	
/5-129	656-7036-006		. . . NUT, BACKSHELL	1	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
12 /5-130	656-7034-001		. . . BACKSHELL, STRAIGHT	1	
/5-131	175-0375	30463	. . . CONDUIT,MET,FLEX 018-0261-020	1	
/5-132	152-0077-040	85480	. . LABEL,CA MKR.	3	
/5-133	MS3116F16-26P	96906	. . CONNECTOR 371-8137-000.	1	
/5-134	JT01RE-14-35SBSR		. . CONNECTOR	1	
/5-135	656-7093-001		. CABLE ASSEMBLY, SIGNAL.	1	
	656-7199-001		. . CONDUIT ASSEMBLY, CABLE	1	
/5-136	656-7036-005		. . . NUT, BACKSHELL.	2	
/5-137	656-7034-002		. . . BACKSHELL, STRAIGHT	1	
/5-138	656-7034-000		. . . BACKSHELL, STRAIGHT	1	
/5-139	175-0375	30463	. . . CONDUIT,MET,FLEX 018-0261-020	AR	
/5-140	152-0077-040	85480	. . LABEL,CA MKR.	3	
/5-141	MS27484T14F35PB	96906	. . CONNECTOR 359-0646-520.	1	
/5-142	MS3116F14-19S	96906	. . CONNECTOR 371-6458-000.	1	
/5-143	656-7102-001		. CABLE ASSEMBLY, SIGNAL.	1	
/5-144	150-0077-040		. . LABEL,CA MKR.	3	
/5-145	D20420-15	71468	. . SCREW LOCK ASSEMBLY 371-0040-060.	4	
/5-146	DA20964	71468	. . ADAPTER 371-0187-000.	2	
/5-147	DD50PC37	71468	. . CONNECTOR,RCPT ELEC 371-0118-000.	2	
/5-148	656-7278-001		. CABLE ASSEMBLY (ALTERED FROM 637-9286-004).	1	
/6-149	152-0077-020	85480	. . LABEL,CA MKR.	3	
/6-150	D20419-18	71468	. . SCREW LOCK ASSEMBLY 371-0040-020.	2	
/6-151	030-1953-000	71468	. . CONTACT,ELEC 371-0946-040	87	
/6-152	634-8565-002		. . SHELL, CONNECTOR.	1	
/6-153	DCC37SF0	71468	. . CONNECTOR,RCPT ELEC 371-0922-040.	1	
/6-154	D20420-13	71468	. . SCREW LOCK ASSEMBLY 371-0040-050.	2	
/6-155	634-8576-002		. . SHELL, CONNECTOR.	1	
/6-156	DDC50SF0	71468	. . CONNECTOR,RCPT ELEC 371-0922-050.	1	
/6-157	656-7279-001		. CABLE ASSEMBLY, CONTROL (ALTERED FROM 637-9286-004)	1	
/6-158	152-0077-020	85480	. . LABEL,CA MKR.	3	
/6-159	D20419-18	71468	. . SCREW LOCK ASSEMBLY 371-0040-020.	2	
/6-160	030-1953-000	71468	. . CONTACT,ELEC 371-0946-040	87	
/6-161	634-8565-002		. . SHELL, CONNECTOR.	1	
/6-162	DCC37SF0	71468	. . CONNECTOR,RCPT ELEC 371-0922-040.	1	
/6-163	D20420-13	71468	. . SCREW LOCK ASSEMBLY 371-0040-050.	2	
/6-164	634-8576-00I		. . SHELL, CONNECTOR.	1	
/6-165	DDC50SF0	71468	. . CONNECTOR,RCPT ELEC 371-0922-050.	1	
/6-166	656-7270-001		. CABLE ASSEMBLY, SIGNAL (ALTERED FROM 647-2555-005)	1	
/6-167	152-0077-020	85480	. . LABEL,CA MKR.	3	
/6-168	D20419-18	71468	. . SCREW LOCK ASSEMBLY 371-0040-020.	2	
/6-169	030-1953-000	71468	. . CONTACT,ELEC 371-0946-040	37	
/6-170	634-8565-001		. . SHELL, CONNECTOR.	1	
/6-171	DCC37SF0	71468	. . CONNECTOR,RCPT ELEC 371-0922-040.	1	
/6-172	D20419-21	71468	. . SCREW LOCK ASSEMBLY 371-0040-030.	2	
/6-173	DA20963	71468	. . ADAPTER 371-0186-000.	1	
/6-174	DCM-37P	71468	. . CONNECTOR,RCPT ELEC 371-0171-000.	1	
/6-175	205839-3	00779	. . CONNECTOR,PLUG ELEC 372-0514-020.	1	
/6-176	6014	92914	. . CABLE,SHIELDED 424-0866-020	1	
/1-177	015-1035-000		. RETRACTOR, CABLE.	6	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	12	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	12	
	MS35338-138	96906	. WASHER 310-0284-000	12	
	AHWX092-003219	85005	. NUT,CLIP STL, 10-32 021-0351-060.	12	
/6-178	656-7002-001		. BAR, GROUND	2	
/6-179	MS51957-81	96906	. SCREW 343-0267-000.	4	
/6-180	MS15795-808	96906	. WASHER 310-0779-080	4	
/6-181	MS35338-138	96906	. WASHER 310-0284-000	4	
/6-182	P313-0148-000	77250	. NUT,PLAIN,HEX NP BRS, 1/4-20 313-0148-000	1	
/6-183	MS35338-101	96906	. WASHER 310-0102-000	2	
/6-184	AN961-416T	88044	. WASHER 310-0751-050	2	
/6-185	P312-0259-000	77250	. STUD,CONT THD BRS. 1/4-20 X 1-1/4 312-0259-000.	1	
	656-7254-001		. CABINET, MODIFIED	1	
/1-186	SS10B166	03481	. . NUT,BLIND RIVET SST, 10-32 334-2716-080	16	
/1-187	656-9052-001		. . PLATE, CABLE PROTECTIVE	2	
/1-188	MS21266-3N	96906	. . PLASTIC CHANNEL 150-0177-000.	AR	
/1-189	656-6881-001		. . CABINET, THREE BAY.	1	


SEE
DETAIL A
SHEETS 2 AND 3
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TOP VIEW
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FRONT VIEW

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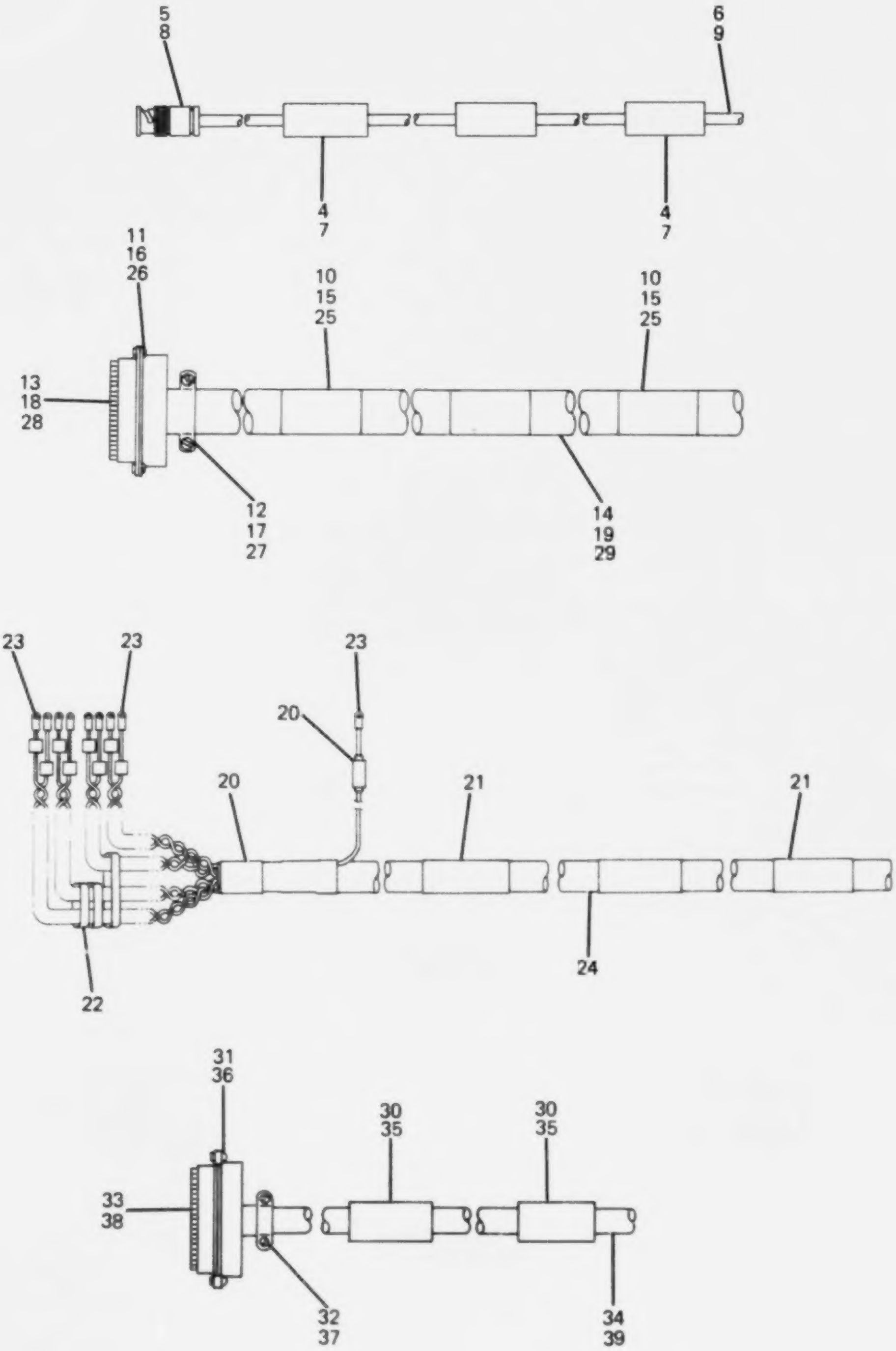
Figure 6-13. Audio Jackfield Assembly (Sheet 1 of 3)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DETAIL A

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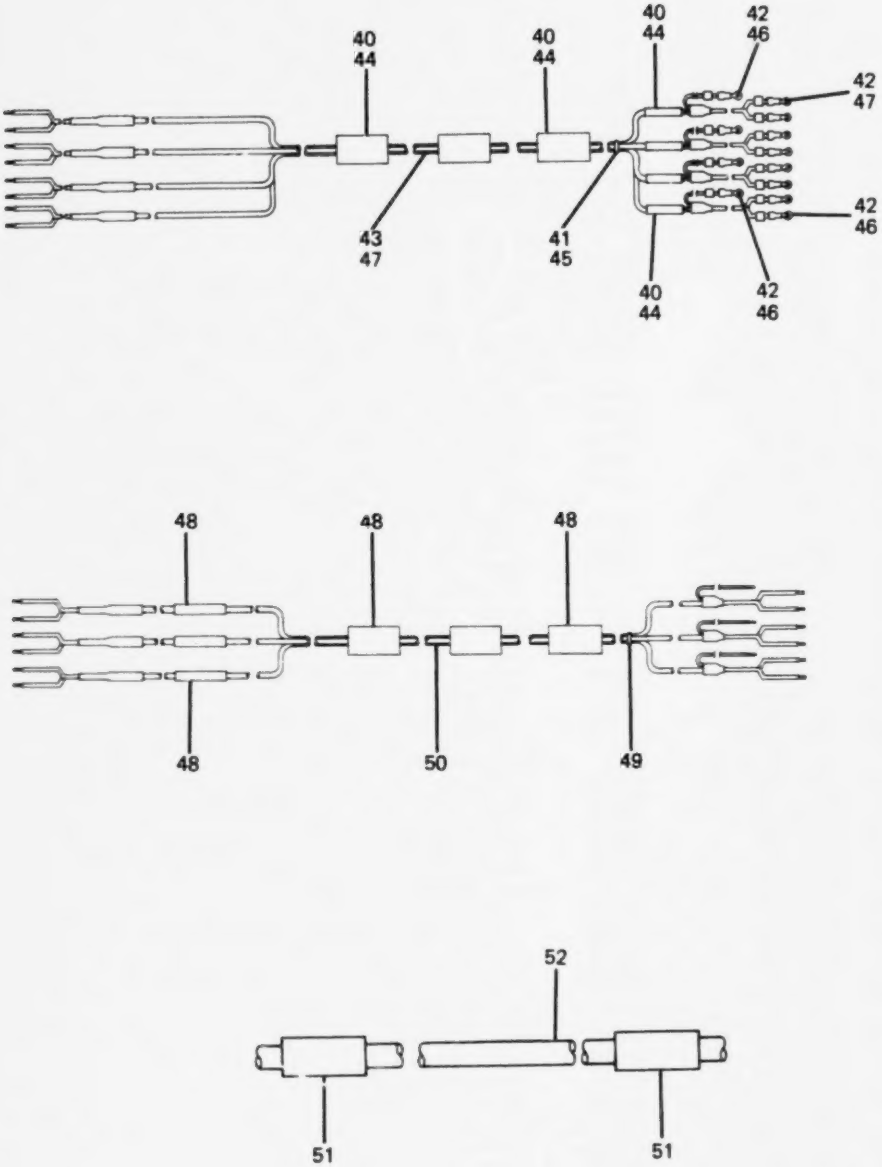
Figure 6-13. Audio Jackfield Assembly (Sheet 2 of 3)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DETAIL A

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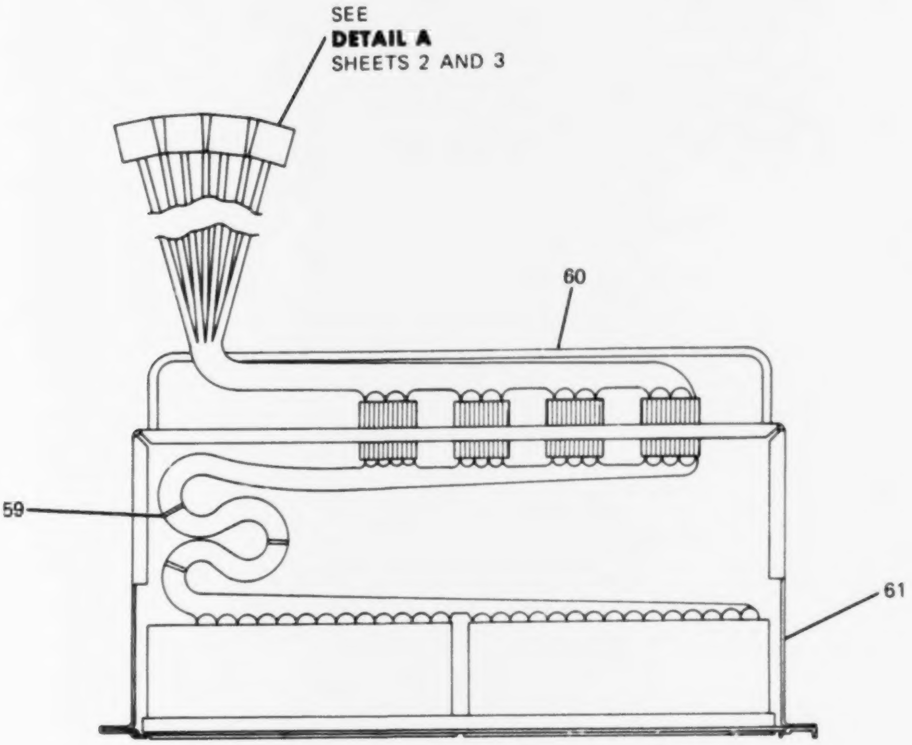
Figure 6-13. Audio Jackfield Assembly (Sheet 3 of 3)

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
13	656-8708-001		JACKFIELD ASSEMBLY, AUDIO (SEE FIGURE 12 FOR NHA)	REF	
-1	656-9047-001		. INSERT, JACKFIELD	1	
/1-2	656-7255-001		. STRIP, IDENT JACKFIELD	1	
/1-3	656-7255-002		. STRIP, IDENT JACKFIELD	1	
	656-7111-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-4	152-0077-020	85480	. . LABEL,CA MKR	3	
/2-5	M39012-16-0101	81349	. . CONNECTOR 357-9292-000	1	
/2-6	M17-028RG058	81349	. . CABLE 425-0042-000	AR	
	656-7110-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-7	152-0077-020	85480	. . LABEL,CA MKR	3	
/2-8	M39012-16-0101	81349	. . CONNECTOR 357-9292-000	1	
/2-9	M17-028RG058	81349	. . CABLE 425-0042-000	AR	
	656-7109-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-10	152-0077-040	85480	. . LABEL,CA MKR	3	
/2-11	D20419-21	71468	. . SCREW LOCK ASSY 371-0040-030	2	
/2-12	DC20963	71468	. . ADAPTER 371-0186-000	1	
/2-13	DCM-37P	71468	. . CONNECTOR,RCPT ELEC 371-0171-000	1	
/2-14	7485-10P22	71124	. . CABLE,ELEC 424-0281-100	AR	
	656-7108-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-15	152-0077-040	85480	. . LABEL,CA MKR	3	
/2-16	D20419-21	71468	. . SCREW LOCK ASSY 371-0040-030	2	
/2-17	DC20963	71468	. . ADAPTER 371-0186-000	1	
/2-18	DCM-37P	71468	. . CONNECTOR,RCPT ELEC 371-0171-000	1	
/2-19	7485-10P22	71124	. . CABLE,ELEC 424-0281-100	AR	
	656-7101-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-20	152-0077-010	85480	. . LABEL,CA MKR	2	
/2-21	152-0077-040	85480	. . LABEL,CA MKR	3	
/2-22	MS3367-1-0	96906	. . CLAMP 435-0002-020	AR	
/2-23	MS25036-101	96906	. . TERMINAL 304-0127-000	9	
/2-24	7485-5P22	71124	. . CABLE,ELEC 424-0281-050	AR	
	656-7103-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-25	152-0077-040	85480	. . LABEL,CA MKR	3	
/2-26	D20420-15	71468	. . SCREW LOCK ASSY 371-0040-060	2	
/2-27	8630-14	49051	. . ADAPTER 371-0187-000	1	
/2-28	DD50PC37	71468	. . CONNECTOR,RCPT ELEC 371-0118-000	1	
/2-29	7485-10P22	71124	. . CABLE,ELEC 424-0281-100	AR	
	656-7208-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-30	152-0077-060	85480	. . LABEL,CA MKR	2	
/2-31	D20419-21	71468	. . SCREW LOCK ASSY 371-0040-030	2	
/2-32	DC20963	71468	. . ADAPTER 371-0186-000	1	
/2-33	DCM-37P	71468	. . CONNECTOR,RCPT ELEC 371-0171-000	1	
/2-34	7485-18P22	71124	. . CABLE,ELEC 424-0281-180	AR	
	656-7209-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-35	152-0077-060	85480	. . LABEL,CA MKR	2	
/2-36	D20419-21	71468	. . SCREW LOCK ASSEMBLY 371-0040-030	2	
/2-37	DA20963	71468	. . ADAPTER 371-0186-000	1	
/2-38	DCM-37P	71468	. . CONNECTOR,RCPT ELEC 371-0171-000	1	
/2-39	7485-18P22	71124	. . CABLE,ELEC 424-0281-180	AR	
	656-7212-001		. CABLE ASSEMBLY, SIGNAL	1	
/3-40	152-0077-040	85480	. . LABEL,CA MKR	2	
/3-41	152-0077-020	85480	. . LABEL,CA MKR	4	
/3-42	MS25036-101	96906	. . TERMINAL 304-0127-000	12	
/3-43	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	
	656-7213-000		. CABLE ASSEMBLY, SIGNAL (AP)	1	
/3-44	152-0077-040	85480	. . LABEL,CA MKR	2	
/3-45	152-0077-020	85480	. . LABEL,CA MKR	4	
/3-46	MS25036-101	96906	. . TERMINAL 304-0127-000	12	
/3-47	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	
	656-7214-001		. CABLE ASSEMBLY, SIGNAL	1	
/3-48	152-0077-020	85480	. . LABEL,CA MKR	5	
/3-49	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
13	656-7215-001		. CABLE ASSEMBLY, SIGNAL.	1	
/3-50	152-0077-040	85480	. . LABEL,CA MKR.	2	
	656-7215-001		. CABLE ASSEMBLY, SIGNAL.	1	
/3-51	7485-5P22	71124	. . CABLE,ELEC 424-0281-050	AR	
/1-52	656-7245-001		. BAR, TIE.	1	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	2	
/1-53	MS3367-1-0	96906	. CLAMP 435-0002-020.	20	
/3-54	7485-10P22	71124	. . CABLE,ELEC 424-0281-100	AR	
/1-55	4-25087-4924	70674	. JACK ASSY,TELEPHCNE 360-0538-010.	1	


SEE
DETAIL A
SHEETS 2 AND 3
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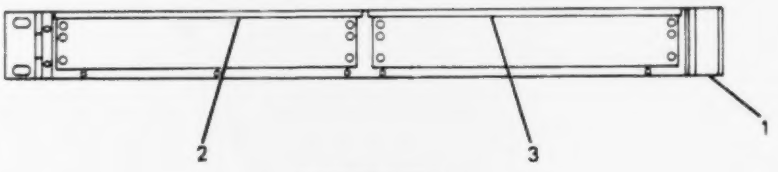
TOP VIEW



FRONT VIEW

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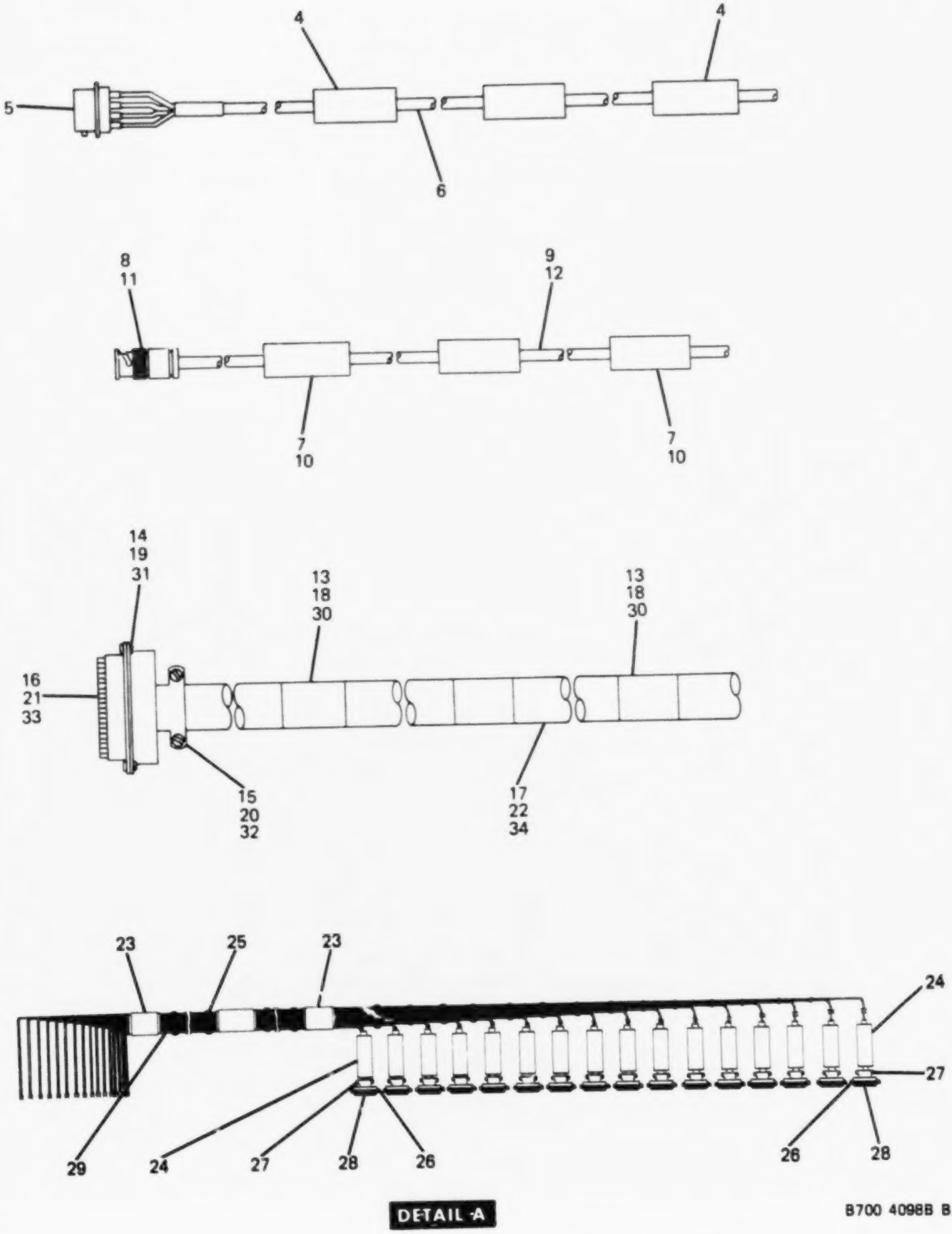
Figure 6-14. DC Jackfield Assembly (Sheet 1 of 3)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DETAIL A
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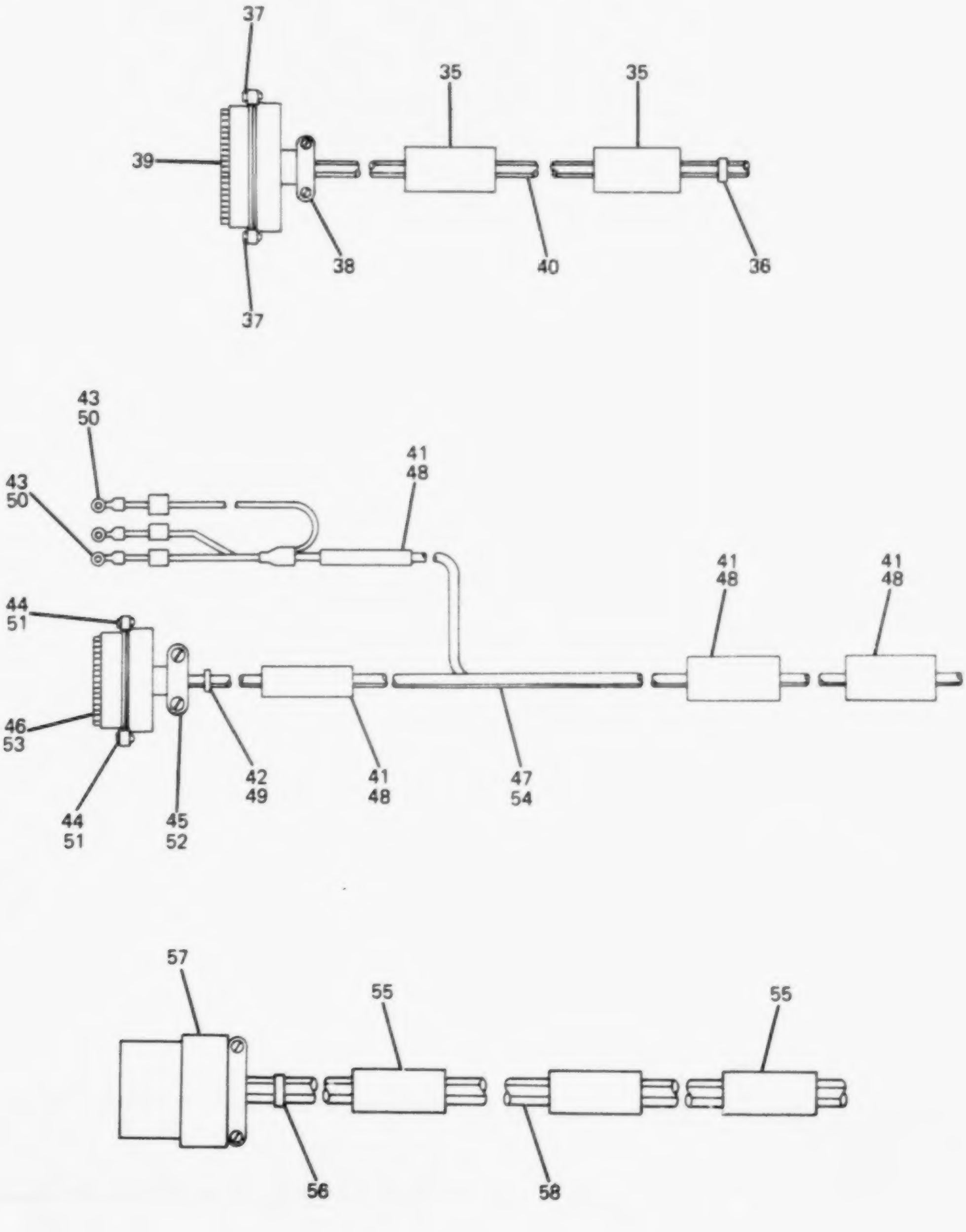
Figure 6-14. DC Jackfield Assembly (Sheet 2 of 3)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DETAIL A

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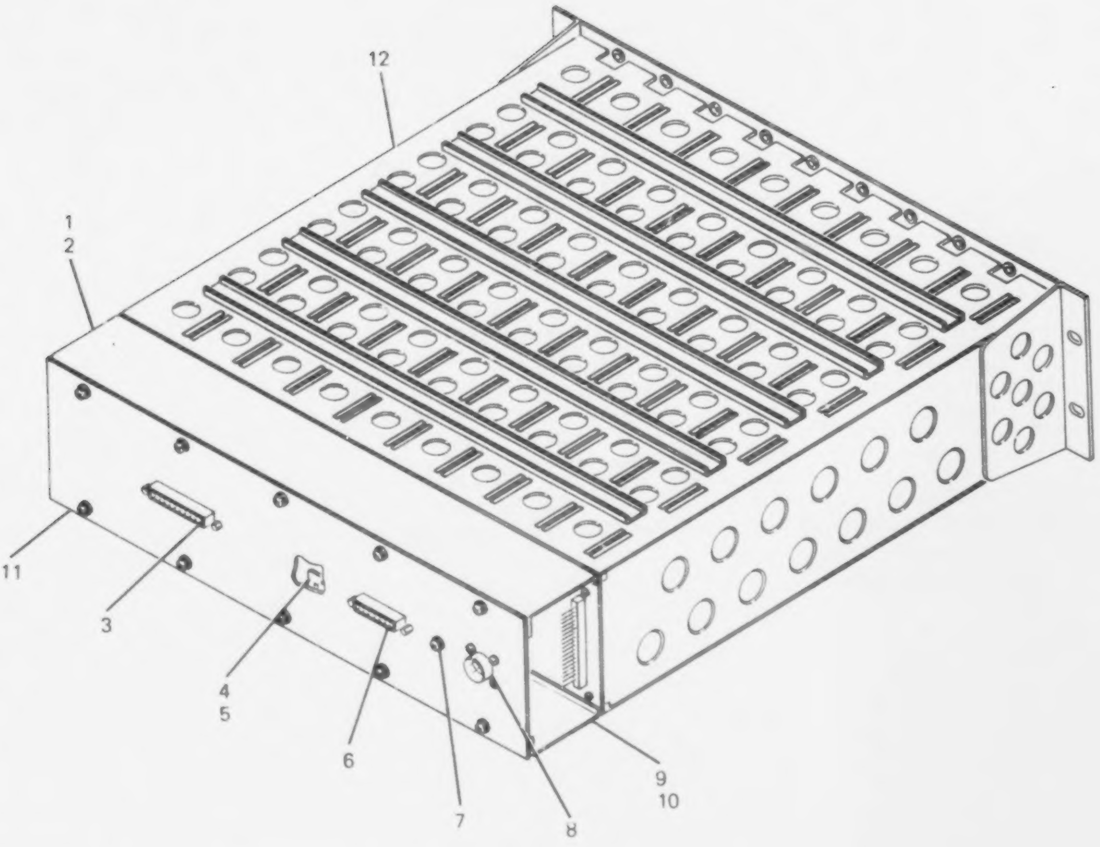
Figure 6-14. DC Jackfield Assembly (Sheet 3 of 3)

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
14	656-8709-001		JACKFIELD ASSEMBLY, DC (SEE FIGURE 12 FOR NHA)	REF	
/1-1	656-9047-001		. INSERT, JACKFIELD	1	
/1-2	656-7255-003		. STRIP, IDENT JACKFIELD	1	
/1-3	656-7255-004		. STRIP, IDENT JACKFIELD	1	
	656-7115-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-4	152-0077-040	85480	. . LABEL,CA MKR	3	
/2-5	MS3112E16-26S	96906	. . CONNECTOR 371-6723-000	1	
/2-6	439-0694-010	13499	. . CABLE,SP,ELEC	AR	
	656-7113-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-7	152-0077-020	85480	. . LABEL,CA MKR	3	
/2-8	M39012-16-0101	81349	. . CONNECTOR 357-9292-000	1	
/2-9	M17-028RG058	81349	. . CABLE 425-0042-000	AR	
	656-7112-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-10	152-0077-020	85480	. . LABEL,CA MKR	3	
/2-11	M39012-16-0101	81349	. . CONNECTOR 357-9292-000	1	
/2-12	M17-028RG058	81349	. . CABLE 425-0042-000	AR	
	656-7107-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-13	152-0077-040	85480	. . LABEL,CA MKR	3	
/2-14	D20419-21	71468	. . SCREW LOCK ASSY 371-0040-030	2	
/2-15	DB20962	71468	. . ADAPTER 371-0185-000	1	
/2-16	DBM-25P	71468	. . CONNECTOR,RCPT ELEC 371-0170-000	1	
/2-17	7485-10P22	71124	. . CABLE,ELEC 424-0281-100	AR	
	656-7106-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-18	152-0077-040	85480	. . LABEL,CA MKR	3	
/2-19	D20419-21	71468	. . SCREW LOCK ASSY 371-0040-030	2	
/2-20	DB20962	71468	. . ADAPTER 371-0185-000	1	
/2-21	DBM-25P	71468	. . CONNECTOR,RCPT ELEC 371-0170-000	1	
/2-22	7485-10P22	71124	. . CABLE,ELEC 424-0281-100	AR	
	656-7105-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-23	152-0077-060	85480	. . LABEL,CA MKR	3	
/2-24	152-0077-020	85480	. . LABEL,CA MKR	16	
/2-25	MS3367-4-0	96906	. CLAMP 435-0002-010	AR	
/2-26	D20419-21	71468	. . SCREW LOCK ASSY 371-0040-030	32	
/2-27	DB20962	71468	. . ADAPTER 371-0185-000	16	
/2-28	DBM-25P	71468	. . CONNECTOR,RCPT ELEC 371-0170-000	16	
/2-29	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	
	656-7104-001		. CABLE ASSEMBLY, SIGNAL	1	
/2-30	152-0077-060	85480	. . LABEL,CA MKR	2	
/2-31	D20420-15	71468	. . SCREW LOCK ASSY 371-0040-060	2	
/2-32	8630-14	49051	. . ADAPTER 371-0187-000	1	
/2-33	DD50PC37	71468	. . CONNECTOR,RCPT ELEC 371-0118-000	1	
/2-34	7485-5P22	71124	. . CABLE,ELEC 424-0281-050	AR	
	656-7211-001		. CABLE ASSEMBLY, SIGNAL	1	
/3-35	152-0077-020	85480	. . LABEL,CA MKR	2	
/3-36	MS3367-4-0	96906	. . CLAMP 435-0002-010	AR	
/3-37	D20419-21	71468	. . SCREW LOCK ASSY 371-0040-030	2	
/3-38	DC20963	71468	. . ADAPTER 371-0186-000	1	
/3-39	DCM-37P	71468	. . CONNECTOR,RCPT ELEC 371-0171-000	1	
/3-40	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	
	656-7217-001		. CABLE ASSEMBLY, SIGNAL	1	
/3-41	152-0077-020	85480	. . LABEL,CA MKR	3	
/3-42	MS3367-4-0	96906	. CLAMP 435-0002-010	AR	
/3-43	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-44	D20419-21	71468	. . SCREW LOCK ASSY 371-0040-030	2	
/3-45	DB20962	71468	. . ADAPTER 371-0185-000	1	
/3-46	DBM-25P	71468	. . CONNECTOR,RCPT ELEC 371-0170-000	1	
/3-47	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	
	656-7218-001		. CABLE ASSEMBLY, SIGNAL	1	
/3-48	152-0077-020	85480	. . LABEL,CA MKR	3	
/3-49	MS3367-4-0	96906	. CLAMP 435-0002-010	AR	
/3-50	MS25036-101	96906	. . TERMINAL 304-0127-000	3	
/3-51	D20419-21	71468	. . SCREW LOCK ASSY 371-0040-030	2	

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
14 /3-52	DB20962	71468	. . ADAPTER 371-0185-000.	1	
/3-53	DBM-25P	71468	. . CONNECTOR,RCPT ELEC 371-0170-000.	1	
/3-54	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	
	656-7216-001		. CABLE ASSEMBLY, SIGNAL.	1	
/3-55	152-0077-040	85480	. . LABEL,CA MKR.	2	
-56	MS3367-4-0	96906	. CLAMP 435-0002-010.	AR	
/3-57	MS3116F22-55S	96906	. . CONNECTOR 371-6510-000.	1	
/3-58	EC22U9-0SF	81349	. . WIRE 439-5275-000	AR	
/1-59	MS3367-1-0	96906	. CLAMP 435-0002-020.	20	
/1-60	656-7245-001		. BAR, TIE.	1	
	MS51957-30	96906	. SCREW 343-0171-000 (AP)	2	
	MS35338-136	96906	. WASHER 310-0282-000 (AP).	2	
	MS15795-805	96906	. WASHER 310-0779-050 (AP).	2	
/1-61	4-25087-4924	70674	. JACKFIELD, DC	1	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REAR VIEW
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Figure 6-15. Keyer/Converter Shelf Assembly

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
15	656-6985-001		SHELF ASSEMBLY, KEYER/CONVERTER (SEE FIGURE 12 FOR NHA)	REF	
	656-6983-001		. BRACKET	1	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	5	
	MS35338-135	96906	. WASHER 310-0279-000 (AP)	5	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	5	
-1	656-6983-003		. . BRACKET, UPPER	1	
-2	NCN6-1-2	07886	. . NUT,CAPTIVE SST, 6-32 334-0426-000	5	
-3	DCM37S	71468	. CONNECTOR,RCPT ELEC 371-0222-000	1	
	M24308/26-1	81349	. SCREW 371-0062-000 (AP)	2	
-4	MS3367-4-0	96906	. CLAMP 435-0002-010	3	
	MS51957-16	96906	. SCREW 343-0136-000 (AP)	2	
-5	ABMSA	06383	. MOUNTING PAD, CABLE TIE	1	
-6	DBM25S	71468	. CONNECTOR,RCPT ELEC 371-0221-000	1	
	M24308/26-1	81349	. SCREW 371-0062-000 (AP)	2	
-7	SE26XF03	81349	. TERMINAL 306-2659-030	1	
	MS51957-31	96906	. SCREW 343-0173-000 (AP)	1	
	MS15795-805	96906	. WASHER 310-0779-050 (AP)	2	
	MS35338-136	96906	. WASHER 310-0282-000 (AP)	1	
	MS35649-264	96906	. NUT 313-0002-000 (AP)	1	
-8	MS3112E12-3P	96906	. CONNECTOR 371-6847-000	1	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	4	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	8	
	MS35338-135	96906	. WASHER 310-0279-000	4	
	MS35649-244	96906	. NUT 313-0043-000	4	
	656-6983-002		. BRACKET	1	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	3	
	MS35338-135	96906	. WASHER 310-0279-000 (AP)	5	
	MS15795-803	96906	. WASHER 310-0779-030	5	
-9	656-6983-004		. . BRACKET, LOWER	1	
-10	NCN6-1-2	07886	. . NUT,CAPTIVE SST, 6-32 334-0426-000	5	
-11	656-6984-001		. PANEL, CONNECTOR	1	
	MS51957-28	96906	. SCREW 343-0169-000 (AP)	10	
	MS35338-136	96906	. WASHER 310-0282-000 (AP)	10	
	MS15795-805	96906	. WASHER 310-0779-050 (AP)	10	
-12	90281192-001	96238	. SHELF,MOUNTING 270-0741-010	1	

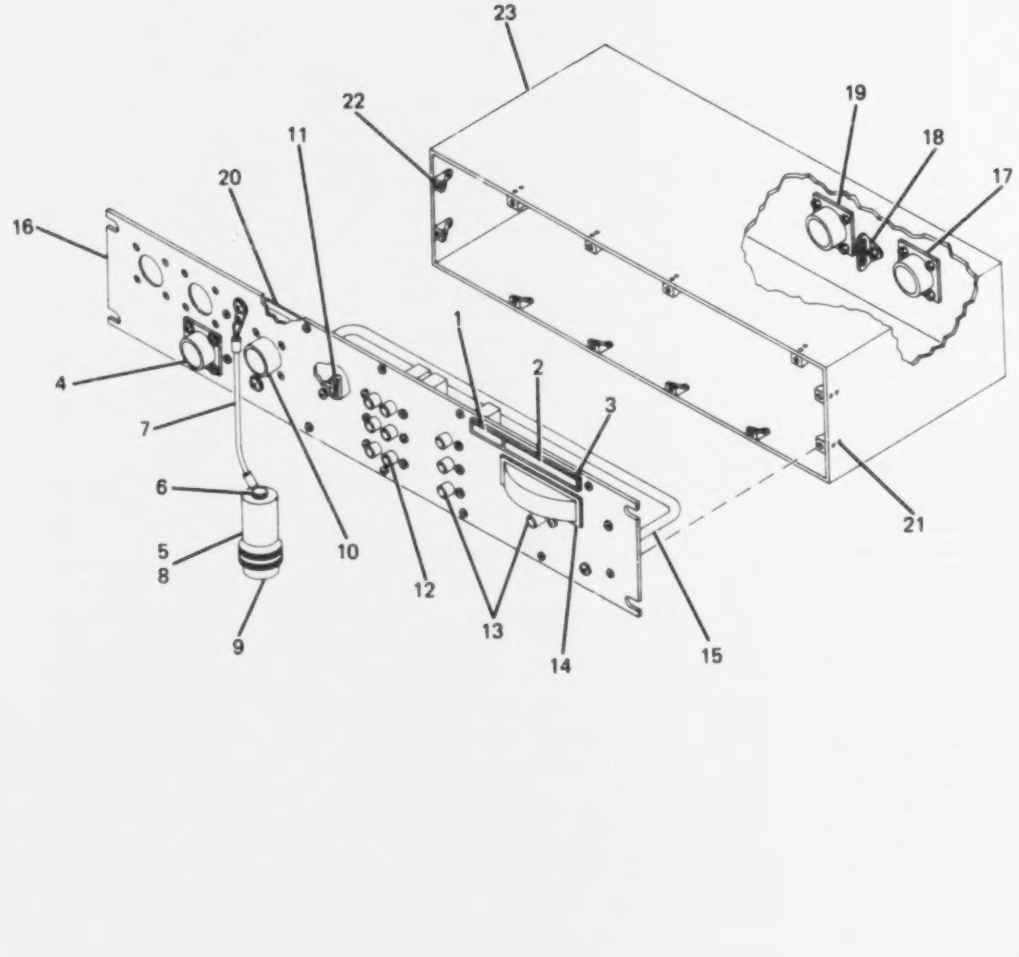
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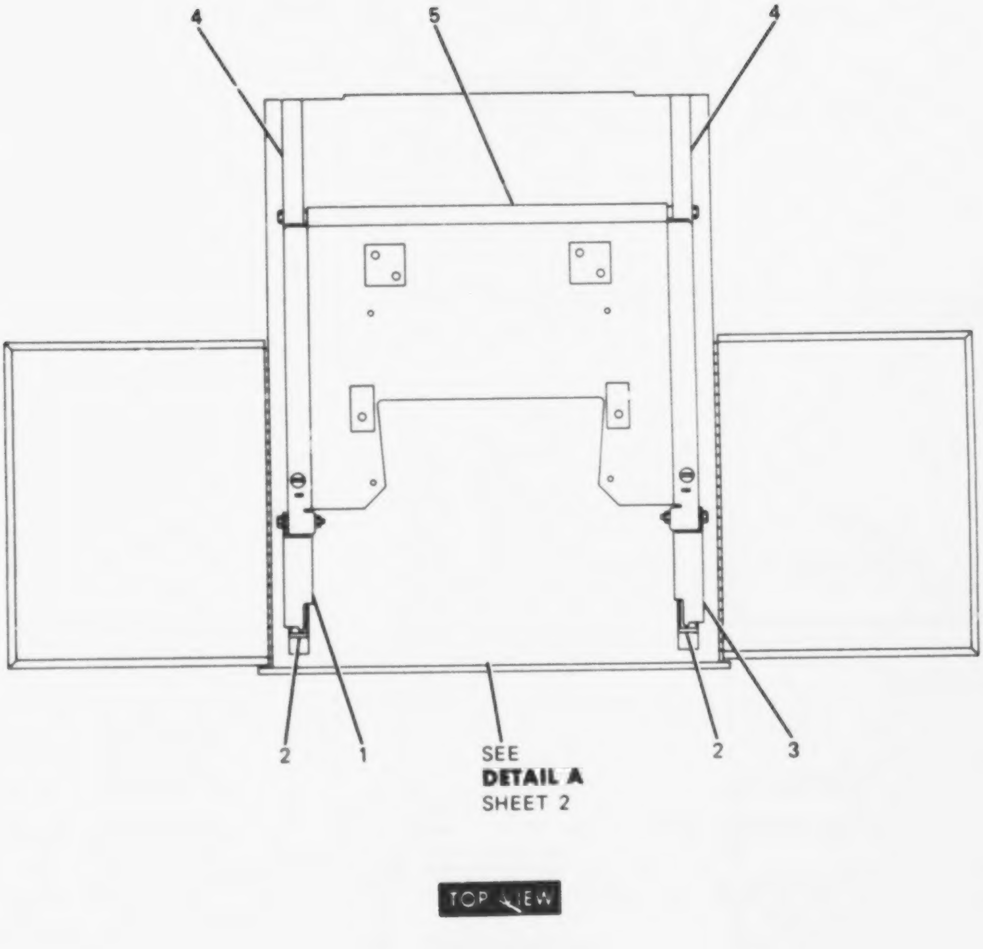
Figure 6-16. Secure Patch Panel Assembly

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
16	656-6899-001		PANEL ASSEMBLY, SECURE PATCH (SEE FIGURE 12 FOR NHA)	REF	
-1	623-9008-001		. INSERT, HOUSEMARK	1	
-2	656-7237-001		. INSERT, PRODUCT	1	
-3	632-5201-001		. HOLDER, IDENT PLATE	1	
	MS51959-15	96906	. SCREW 342-0046-000 (AP)	2	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	2	
	MS21044C04	96906	. NUT 333-1299-000 (AP)	2	
-4	MS3115-14A	96906	. DUMMY CONN 371-8393-040	1	
	MS51957-17	96906	. SCREW 343-0137-000 (AP)	4	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	8	
	MS21044C04	96906	. NUT 333-1299-000 (AP)	4	
	656-6990-001		. CONNECTOR ASSEMBLY, BYPASS	1	
	MS51957-31	96906	. SCREW 343-0173-000 (AP)	1	
	MS15795-805	96906	. WASHER 310-0779-050	2	
	MS21044C06	96906	. NUT 333-1300-000	1	
-5	656-6989-001		. . BACKSHELL	1	
-6	656-6988-001		. . . RIVET	1	
-7	LW1023-1-6-0	83014	. . . WIRE ROPE ASSY 432-1120-000	1	
-5	656-6987-001		. . . BACKSHELL	1	
-9	MS3116F14-19S	96906	. . CONNECTOR 371-6458-000	1	
-10	MS3110E14-19P	96906	. CONNECTOR 371-8388-260	1	
	MS51959-15	96906	. SCREW 342-0046-000 (AP)	4	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	4	
	MS21044C04	96906	. NUT 333-1299-000 (AP)	4	
-11	547-5305-002	13499	. TERMINAL,LUG	1	
	MS51957-29	96906	. SCREW 343-0170-000 (AP)	1	
	MS15795-805	96906	. WASHER 310-0779-050 (AP)	2	
	MS21044C06	96906	. NUT 333-1300-000 (AP)	1	
-12	92LN1030B	81812	. JACK ASSY,TEL 360-0294-000	3	
	MS51957-17	96906	. SCREW 343-0137-000 (AP)	6	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	6	
	MS21044C04	96906	. NUT 333-1299-000 (AP)	6	
-13	JJ022	81349	. JACK 360-0296-010	4	
	MS51957-17	96906	. SCREW 343-0137-000 (AP)	4	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	4	
	MS21044C04	96906	. NUT 333-1299-000 (AP)	4	
-14	126-5175-001		. METER, VOLT	1	
-15	656-7128-001		. SUPPORT, CABLE	1	
	MS51957-46	96906	. SCREW 343-0190-000 (AP)	2	
	MS15795-807	96906	. WASHER 310-0779-070 (AP)	2	
-16	656-7126-001		. PANEL	1	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	12	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	12	
-17	MS3110E14-19P	96906	. CONNECTOR 371-8388-260	1	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	4	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	8	
	MS21044C04	96906	. NUT 333-1299-000 (AP)	4	
-18	547-5305-002	13499	. TERMINAL,LUG	1	
	MS51957-29	96906	. SCREW 343-0170-000 (AP)	1	
	MS15795-805	96906	. WASHER 310-0779-050 (AP)	2	
	MS21044C06	96906	. NUT 333-1300-000 (AP)	1	
-19	MS3112E14-19S	96906	. CONNECTOR 371-8590-010	1	
	MS51957-15	96906	. SCREW 343-0135-000 (AP)	4	
	MS15795-803	96906	. WASHER 310-0779-030 (AP)	8	
	MS21044C04	96906	. NUT 333-1299-000	4	
-20	352-1003	57003	. GASKET	AR	
	656-7129-001		. CHASSIS, SECURE PATCH PANEL	1	
-21	MS20470AD4-4	96906	. . RIVET 305-1169-000	24	
-22	RM52LHA227-40	72962	. . NUT,SLFLKG,PL CD PL STL, 4-40 333-1159-000	12	
-23	656-7129-002		. . CHASSIS	1	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DETAIL A
SHEET 2
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TOP VIEW

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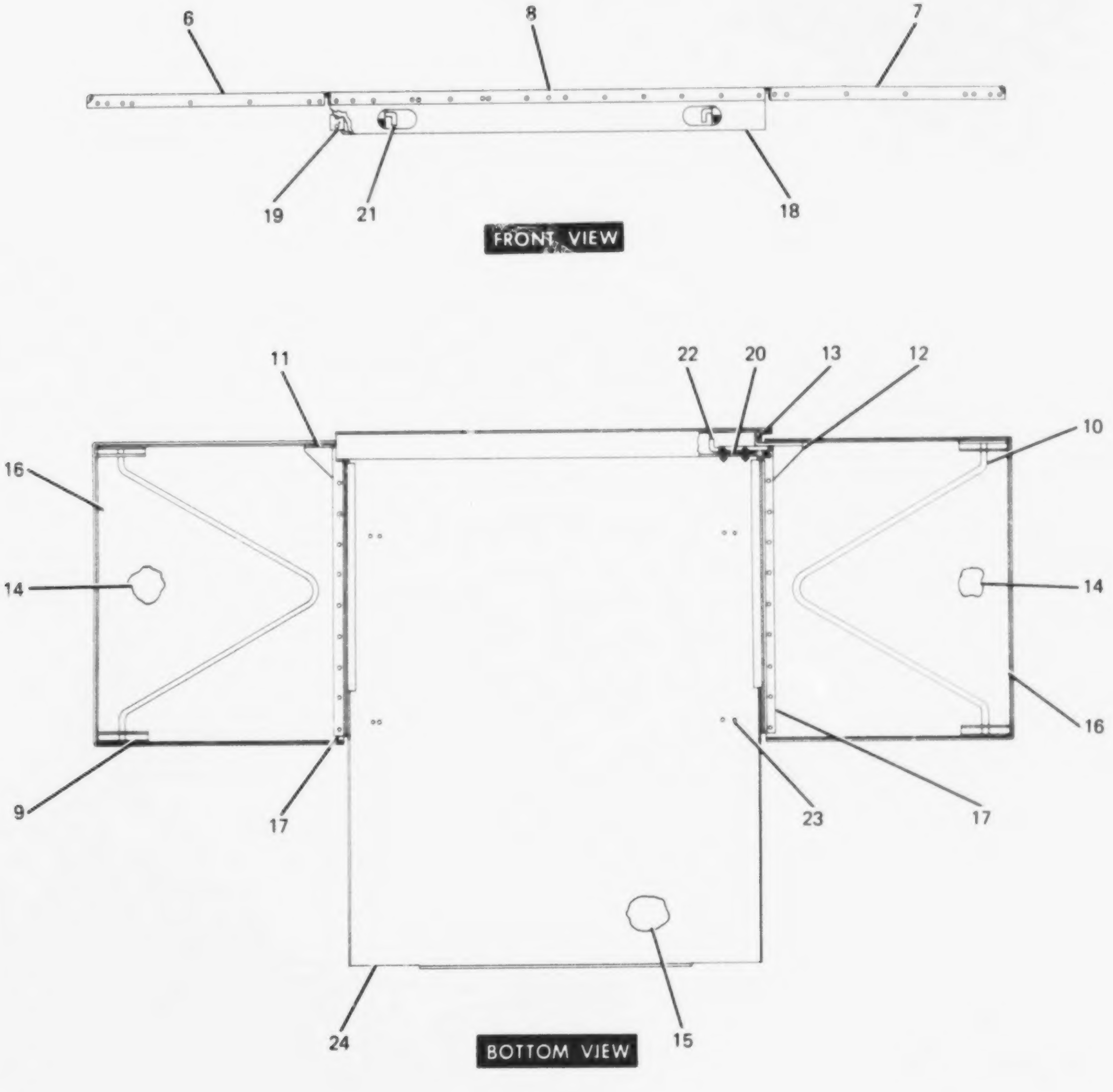
Figure 6-17. TTY Mounting/Writing Shelf (Sheet 1 of 2)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FRONT VIEW
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BOTTOM VIEW
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DETAIL A

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Figure 6-17. TTY Mounting/Writing Shelf (Sheet 2 of 2)

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
17	656-9050-001		SHELF, TTY MOUNGING/WRITING (SEE FIGURE 6 FOR NHA)	REF	
-1	656-8755-001		. ARM, POSITIONING LEFT	1	
	AN3-16A	88044	. BOLT 326-2617-050 (AP)	1	
	AN960CI0L	88044	. WASHER 310-0015-080 (AP)	4	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	1	
/1-2	656-8757-001		. GASKET, ADAPTER-TTY	2	
/1-3	656-8755-002		. ARM POSITIONING RIGHT	1	
	AN3-16A	88044	. BOLT 326-2617-050 (AP)	1	
	AN960CI0L	88044	. WASHER 310-0015-080 (AP)	4	
	MS21044C3	96906	. NUT 333-1302-000 (AP)	1	
/1-4	656-8753-001		. RAIL, SUPPORT-TTY MTG	2	
	MS51957-47	96906	. SCREW 343-0191-000 (AP)	14	
	MS35338-137	96906	. WASHER 310-0072-000 (AP)	14	
	MS15795-807	96906	. WASHER 310-0779-070 (AP)	14	
/1-5	656-8754-001		. ADAPTER, MOUNGING TTY	1	
	AN960C516L	88044	. WASHER 310-0015-260 (AP)	6	
	MS17830-5C	96906	. NUT 333-0444-000 (AP)	2	
	656-6895-001		. SHELF ASSEMBLY, WRITING	1	
/2-6	656-6910-002		. . EXTENSION, TRIM	1	
	MS20426AD3-4	96906	. . RIVET 305-1362-000 (AP)	12	
/2-7	656-6910-001		. . EXTENSION, TRIM	1	
	MS20426AD3-4	96906	. . RIVET 305-1362-000 (AP)	1	
/2-8	656-6917-001		. . TRIM, SHELF FRONT	1	
	MS20426AD3-5	96906	. . RIVET 305-1363-000 (AP)	12	
/2-9	656-6924-001		. . BRACKET, SUPPORT PIVOT	4	
	MS20426AD3-5	96906	. . RIVET 305-1363-000 (AP)	16	
/2-10	656-6920-001		. . SUPPORT, SHELF	2	
/2-11	656-6914-001		. . SHIM, EXTENSION	1	
	MS20426AD3-5	96906	. . RIVET 305-1363-000 (AP)	2	
/2-12	656-6914-001		. . SHIM, EXTENSION	1	
	MS20426AD3-5	96906	. . RIVET 305-1363-000 (AP)	2	
/2-13	656-7244-001		. . STOP, SHELF	2	
/2-14	656-6915-001		. . COVER, EXTENSION SHELF	2	
/2-15	656-6916-001		. . COVER, WRITING SHELF	1	
/2-16	656-6927-001		. . SHELF, EXTENSION	2	
/2-17	656-6911-001		. . HINGE, EXTENSION (ALTERED FROM 015-9043-000)	2	
	MS20426AD3-4	96906	. . RIVET 305-1362-000 (AP)	20	
/2-18	656-6918-001		. . SHELF, FRONT	1	
	MS20426AD3-4	96906	. . RIVET 305-1362-000 (AP)	7	
/2-19	MS20426AD3-5	96906	. . RIVET 305-1363-000	4	
/2-20	656-6925-001		. . STIFFNER, LATCH	2	
	MS51957-16	96906	. . SCREW 343-0136-000 (AP)	2	
	MS51957-17	96906	. . SCREW 343-0137-000 (AP)	2	
	MS15795-803	96906	. . WASHER 310-0779-030 (AP)	12	
	MS21044C04	96906	. . NUT 333-1299-000 (AP)	6	
/2-21	656-6912-001		. . HINGE, LATCH- MODIFICATION, LEFT (ALTERED FROM 015-4039-020)	1	
/2-22	656-6912-001		. . HINGE, LATCH- MODIFICATION (ALTERED FROM 015-4039-010)	1	
	656-6923-001		. . SHELF, WRITING	1	
/2-23	FHS1032-8	46384	. . . STUD,SELF-CLINCHING SST, 10-32 X 1/2 330-2814-000	8	
/2-24	656-6923-002		. . . SHELF	1	

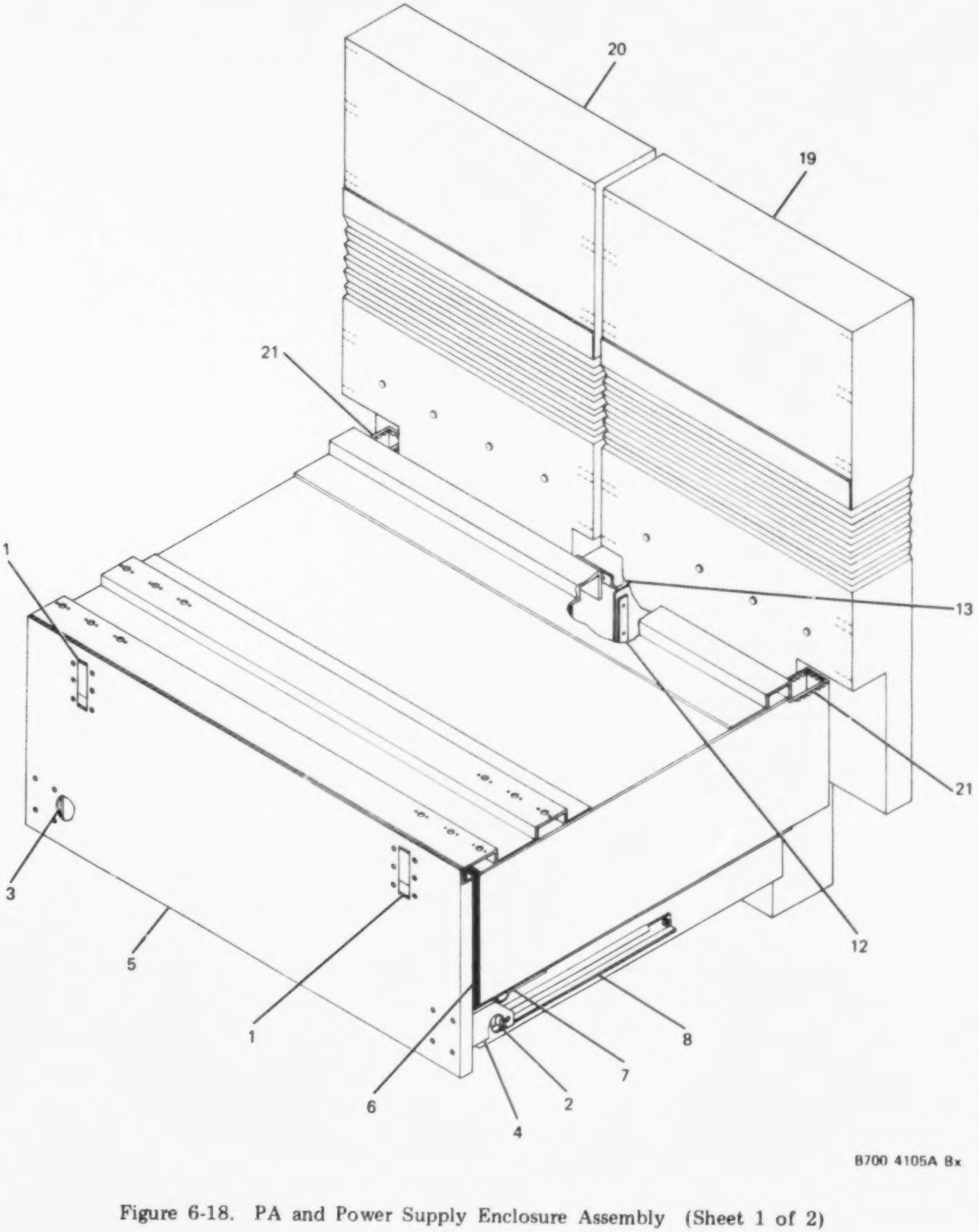
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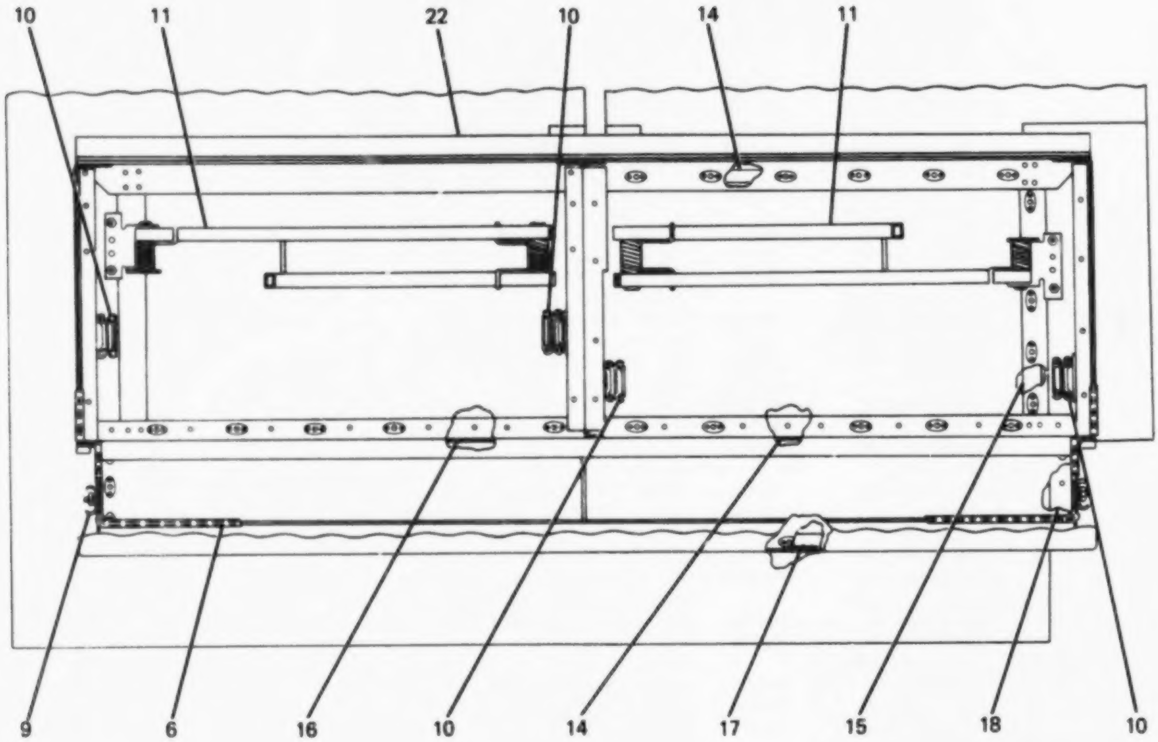
Figure 6-18. PA and Power Supply Enclosure Assembly (Sheet 1 of 2)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DOOR REMOVED

FRONT VIEW

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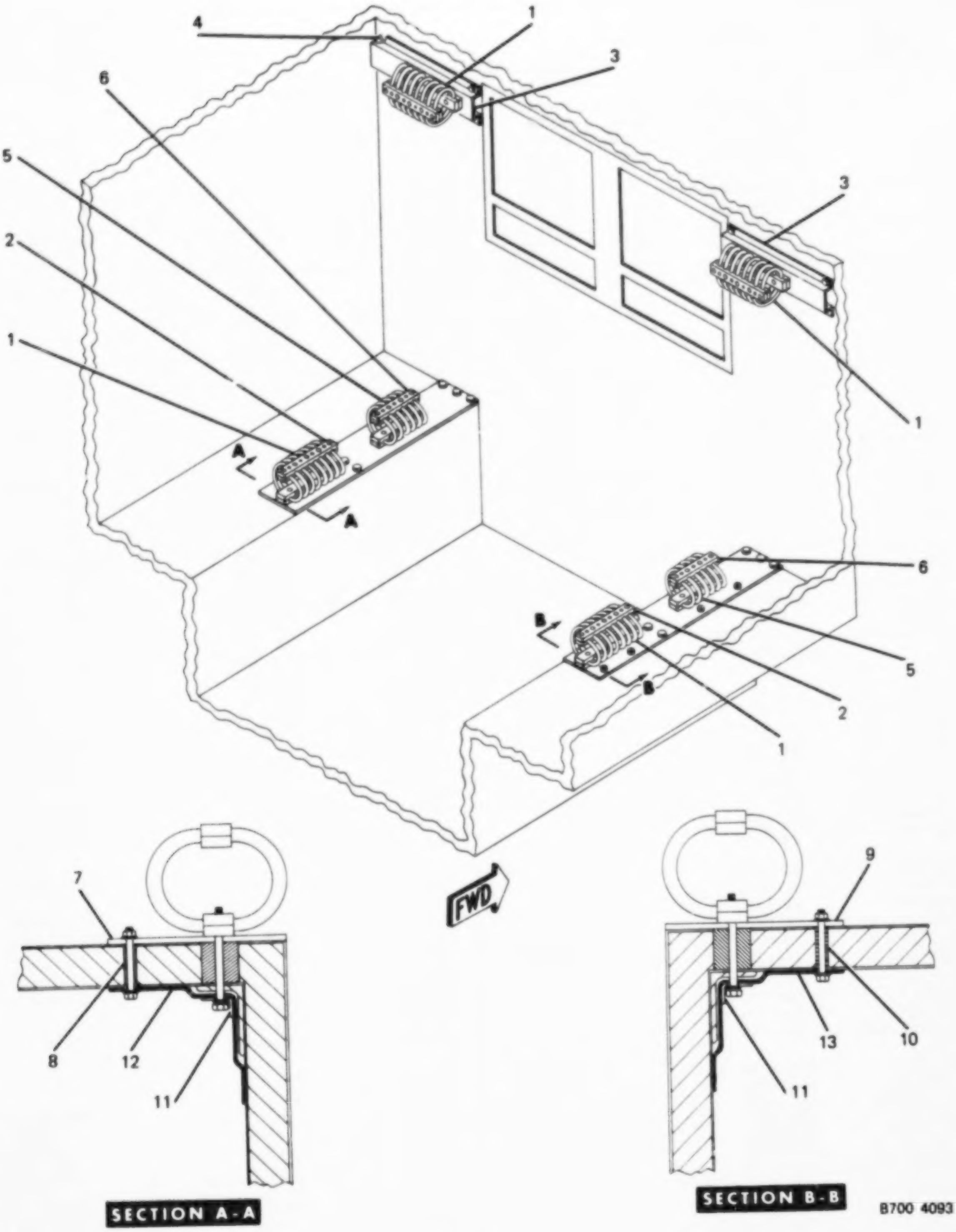
Figure 6-18. PA and Power Supply Enclosure Assembly (Sheet 2 of 2)

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
18	656-6891-001		ENCLOSURE ASSEMBLY, PA AND POWER SUPPLY (SEE FIGURE 6 FOR NHA)	REF	
	656-7183-001		. DOOR ASSEMBLY, PA AND POWER SUPPLY.	1	
/1-1	H38-0.064-0.251	83014	. . LATCH 015-3105-050.	2	
	MS51959-16	96906	. . SCREW 342-0047-000 (AP)	12	
	MS15795-803	96906	. . WASHER 310-0779-030 (AP).	12	
	MS35338-135	96906	. . WASHER 310-0279-000 (AP).	12	
	MS35649-244	96906	. . NUT 313-0043-000 (AP)	12	
/1-2	656-6932-001		. . GUIDE, ROLLER	2	
	MS51959-79	96906	. . SCREW 342-0258-000 (AP)	2	
/1-3	656-6929-001		. . BRACKET, DOOR	1	
	MS51959-30	96906	. . SCREW 342-0064-000 (AP)	4	
	MS15795-805	96906	. . WASHER 310-0779-050 (AP).	4	
	MS35338-136	96906	. . WASHER 310-0282-000 (AP).	4	
	MS35649-264	96906	. . NUT 313-0002-000 (AP)	4	
/1-4	656-6929-002		. . BRACKET, DOOR	1	
	MS51959-30	96906	. . SCREW 342-0064-000 (AP)	4	
	MS15795-805	96906	. . WASHER 310-0779-050 (AP).	4	
	MS35338-136	96906	. . WASHER 310-0282-000 (AP).	4	
	MS35649-264	96906	. . NUT 313-0002-000 (AP)	4	
/1-5	656-6928-001		. . DOOR, PA AND POWER SUPPLY	1	
/1-6	X-129(BUNA-S)	70485	. RUBBER CHANNEL 200-2425-010	AR	
/1-7	656-6930-001		. STOP, DOOR.	2	
	MS51958-61	96906	. SCREW 343-0226-000 (AP)	4	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	4	
/1-8	656-6931-001		. RAIL, DOOR.	1	
	MS51958-62	96906	. SCREW 343-0227-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	2	
	MS35650-304	96906	. NUT 313-0019-000 (AP)	2	
/2-9	656-6931-001		. RAIL, DOOR.	1	
	MS51958-62	96906	. SCREW 343-0227-000 (AP)	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	2	
	MS35650-304	96906	. NUT 313-0019-000 (AP)	2	
/2-10	340104		. SLIDE, CHASSIS.	1	
	MS51957-45	96906	. SCREW 343-0189-000 (AP)	20	
/2-11	CRS25	05236	. CABLE CARRIER 015-3809-010.	2	
	MS51960-62	96906	. SCREW 342-0221-000 (AP)	4	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	4	
	MS35650-304	96906	. NUT 313-0019-000 (AP)	4	
/1-12	656-7151-005		. BAR, MOUNTING-AIR DUCT.	1	
	MS51959-26	96906	. SCREW 342-0060-000 (AP)	5	
	M45938-4-5	81349	. NUT 334-1476-000 (AP)	5	
/1-13	656-7153-001		. COVER, SLIDE.	1	
	MS51958-64	96906	. SCREW 343-0229-000 (AP)	2	
	MS15795-808	96906	. WASHER 310-0779-080 (AP).	2	
	MS35338-138	96906	. WASHER 310-0284-000 (AP).	2	
/2-14	656-7151-001		. BAR, MOUNTING-AIR DUCT.	2	
	MS51959-30	96906	. SCREW 342-0064-000 (AP)	12	
/2-15	656-7151-005		. BAR, MOUNTING-AIR DUCT.	1	
	MS51959-29	96906	. SCREW 342-0063-000 (AP)	5	
/2-16	656-7151-002		. BAR, MOUNTING-AIR DUCT.	1	
	MS51959-30	96906	. SCREW 342-0064-000 (AP)	6	
/2-17	656-7151-003		. BAR, MOUNTING-AIR DUCT.	1	
	MS51959-29	96906	. SCREW 342-0063-000 (AP)	12	
/2-18	656-7151-004		. BAR, MOUNTING-AIR DUCT.	2	
	MS51959-29	96906	. SCREW 342-0063-000 (AP)	6	
/1-19	656-7136-002		. DUCT ASSEMBLY, AIR- EXHAUST	1	
/1-20	656-7137-002		. DUCT, ASSEMBLY, AIR-INTAKE.	1	
/1-21	MS21266-2N	96906	. PLASTIC CHANNEL 150-0175-000.	2	
/2-22	656-6892-001		. ENCLOSURE PA AND POWER SUPPLY	1	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SECTION A-A
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SECTION B-B
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Figure 6-19. Isolator Installation

FIGURE & INDEX NUMBER	PART NUMBER	FSCM	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
19	656-6949-001		INSTALLATION, ISOLATOR (SEE FIGURE 6 FOR NHA) . . .	REF	
-1	CBG-1400-2012	88379	. ISOLATOR.	4	
	MS16998-45	96906	. SCREW 324-1507-000 (AP)	16	
	MS35338-139	96906	. WASHER 310-0288-000 (AP).	16	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	16	
-2	656-6942-001		. SPACER ISOLATOR-SUPPORT	8	
-3	656-6950-001		. MOUNT, ISOLATOR	2	
	MS35307-337	96906	. SCREW 326-2293-000 (AP)	8	
	MS35338-140	96906	. WASHER 310-0290-000 (AP).	8	
	MS15795-812	96906	. WASHER 310-0779-120 (AP).	8	
-4	S31-425	03481	. NUT,BLIND,RIVET CD PL STL, 5/16-18 334-2716-630 .	8	
-5	CBG-6-1400-2012	88379	. ISOLATOR (6 TURN)	2	
	MS90727-18	96906	. SCREW 326-1949-000 (AP)	4	
	MS35338-139	96906	. WASHER 310-0288-000 (AP).	4	
	NAS620C416	80205	. WASHER 310-0740-640 (AP).	4	
-6	656-6942-001		. SPACER, ISOLATOR-SUPPORT.	8	
-7	656-6944-001		. PLATE, ISOLATOR-SUPPORT, LEFT	1	
	MS35307-315	96906	. SCREW 326-2271-000 (AP)	4	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	8	
	MS17830-4C	96906	. NUT 333-0428-000 (AP)	4	
-8	656-6943-001		. SPACER, ISOLATOR-PLATE.	4	
-9	656-6944-002		. PLATE ISOLATOR-SUPPORT, RIGHT	1	
	MS35307-315	96906	. SCREW 326-2271-000 (AP)	4	
	MS15795-810	96906	. WASHER 310-0779-100 (AP).	8	
	MS17830-4C	96906	. NUT 333-0428-000 (AP)	4	
-10	656-6943-001		. SPACER, ISOLATOR-PLATE.	4	
-11	656-6941-001		. STIFFNER, ISOLATOR-MOUNT.	4	
	MS90727-18	96906	. SCREW 326-1949-000 (AP)	16	
-12	656-6945-001		. SUPPORT, EXTERNAL-ANGLE, LEFT	1	
	CR2163T6-4	11815	. RIVET,BLIND AL ALY, 0.187 DIA X 0.375 305-2094-180 (AP)	19	
-13	656-6945-002		. SUPPORT, EXTERNAL-ANGLE	1	
	CR2163T6-4	11815	. RIVET,BLIND AL ALY, 0.187 DIA X 0.375 305-2094-180 (AP)	19	

SECTION III
NUMERICAL INDEX

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
ABMSA	15-5	1	PAFZZN
AD42AH	F9-18	2	PAFZZN
AD43H	F8-55		PAFZZN
	F8-56		PAFZZN
	F8-57		PAFZZN
	F8-58		PAFZZN
	F8-59		PAFZZN
	F8-60	48	PAFZZN
AD44H	F7-1		PAFZZN
	F7-2	6	PAFZZN
AD66AH	F1-11		PAFZZN
	F1-48		PAFZZN
	F6-7		PAFZZN
	F6-12	34	PAFZZN
AHWX092-003219	F12-33		PAFZZN
	F12-40		PAFZZN
	F12-41		PAFZZN
	F12-42		PAFZZN
	F12-43		PAFZZN
	F12-47		PAFZZN
	F12-48		PAFZZN
	F12-51		PAFZZN
	F12-177	52	PAFZZN
AN/UGC-74 (V)3	1/2-110	1	
AN104612	F6-29	20	PAFZZN
AN3-16A	F17-1		PAFZZN
	F17-3	2	PAFZZN
AN3167-1	6/2-109	1	PAFZZN
AN3195-11	6/4-178	2	PAFZZN
AN3195-21	6/4-179	2	PAFZZN
AN960CI0L	F17-1		PAFZZN
	F17-3	8	PAFZZN
AN960C516L	F17-5	6	PAFZZN
AN961-416T	7-11		PAFZZN
	7-15		PAFZZN
	F10-33		PAFZZN
	10/1-35		PAFZZN
	10/1-50		PAFZZN
	10/4-63		PAFZZN
	10/4-70		PAFZZN
	10/1-88		PAFZZN
	12/6-184	17	PAFZZN
APL1-531-350	7-6	1	PAFZZN
A1A1	8/2-7	122	PAFZZN
A1A230	8/2-6	122	PAFZZN
A10-166	6/4-192	8	PAFZZN
A739	12/2-13	1	PAFZZN
B-200-18	6/1-61	1	PAFZZN
BS10370BLK	1/4-37		PAFZZN
	5-20		PAFZZN
	5-31		PAFZZN
BS10370BLK	6/2-93		PAFZZN
	6/2-117	11	PAFZZN
BT02A20-39P	8/1-63	1	PAFZZN
CA-4017-4	10/4-83		XBF---
	10/1-101	2	PAFZZN
CBG-1400-2012	19-1	4	PADDLT
CBG-6-1400-2012	19-5	2	PADDLT
CH5J/M	1/1-146	1	PAOZZ-
CL-26-EB	10/4-73		PAFZZN
	10/1-91	2	PAFZZN
CL-4-BLP-T-2.0	1/1-48	2	PAFZZN
CL-70-SBP-2	6/5-147	2	PAFZZN
CRES-.390IDX.875 ODX.060TH	F6-34		PAFZZN
	F6-82		PAFZZN
	F6-148	8	PAFZZN
CRS25	18/2-11	2	PAFZZN
CR2162T8-3	F6-191	4	PAFZZN
CR2163T6-4	F6-2		PAFZZN
	F19-12		PAFZZN
	F19-13	53	PAFZZN
CR2163T6-5	F6-2	6	PAFZZN
CR2163T6-6	F6-2	14	PAFZZN
CR30-660	12/2-21	1	PAFZZN
DA20963	6/6-195		PAFZZN
	12/6-173		PAFZZN
	13/2-37	3	PAFZZN
DA20964	2-12		PAFZZN
	12/5-146	3	PAFZZN
DBM-25P	14/2-16		PAFZZN
	14/2-21		PAFZZN
	14/2-28		PAFZZN
	14/3-46		PAFZZN
	14/3-53	20	PAFZZN
DBM25S	15-6	1	PAFZZN
DB20962	14/2-15		PAFZZN
	14/2-20		PAFZZN
	14/2-27		PAFZZN
	14/3-45		PAFZZN
	14/3-52	20	PAFZZN
DCC375F0	12/6-153		PAFZZN
	12/6-162		PAFZZN
	12/6-171	3	PAFZZN
DCM-37P	6/6-196		PAFZZN
	12/6-174		FAFZZN
	13/2-13		PAFZZN
	13/2-18		PAFZZN
	13/2-33		PAFZZN
	13/2-38		PAFZZN
	14/3-39	7	PAFZZN
DCM-37S	6/6-197	1	PAFZZN

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
DCM375	8/2-34		PAFZZN
	15-3	5	PAFZZN
DC20963	13/2-12		PAFZZN
	13/2-17		PAFZZN
	13/2-32		PAFZZN
	14/3-38	4	PAFZZN
DDC50SF0	12/6-156		PAFZZN
	12/6-165	2	PAFZZN
DDM505	2-3		
	8/2-35	3	PAFZZN
DD50PC37	2-11		PAFZZN
	12/5-147		PAFZZN
	13/2-28		PAFZZN
	14/2-33	5	PAFZZN
DEMF95	9/1-52	1	PAFZZN
D20419-18	12/6-150		PAFZZN
	12/6-159		PAFZZN
	12/6-168	6	PAFZZN
D20419-21	6/6-194		PAFZZN
	12/6-172		PAFZZN
	13/2-11		PAFZZN
	13/2-16		PAFZZN
	13/2-31		PAFZZN
	13/2-36		PAFZZN
	14/2-14		PAFZZN
	14/2-19		PAFZZN
	14/2-26		PAFZZN
	14/3-37		PAFZZN
	14/3-44		PAFZZN
	14/3-51	54	PAFZZN
D20420-13	12/6-154		PAFZZN
	12/6-163	4	PAFZZN
D20420-15	F2-11		PAFZZN
	12/5-145		PAFZZN
	13/2-26		PAFZZN
	14/2-31	10	PAFZZN
D5227-2	1/2-97	1	PAFDDT
D5307	2-13	1	ADDDD-
D5379	1/2-104	1	PAFDDT
EC22U0-4-5SF	10/5-128	AR	PAFZZN
	10/5-133	AR	PAFZZN
	10/6-145	AR	PAFZZN
	10/7-162	AR	PAFZZN
	10/7-167	AR	PAFZZN
EC22U9-0SF	10/6-139	AR	PAFZZN
	10/6-150	AR	FAFZZN
	10/6-156	AR	PAFZZN
	10/7-171	AR	PAFZZN
	13/3-43	AR	PAFZZN
	13-47	AR	PAFZZN
	13/3-49	AR	PAFZZN
	14/2-29	AR	PAFZZN
	14/3-40	AR	PAFZZN
	14/3-47	AR	PAFZZN
	14/3-54	AR	PAFZZN
	14/3-58	AR	PAFZZN
FAL-34045-1D21	10/1-39	1	PAFZZN
FHL17G1	11-10	3	PAFZZN
FHS1032-10	11-15	4	PAFZZN
FHS1032-12	8/1-65		PAFZZN
	11-16	8	PAFZZN
FHS1032-8	17/2-23	8	PAFZZN
FHS832-10	6/3-39	3	PAFZZN
FH22HM	10/2-32	1	PAFZZN
FPN10-32SCL	3-8		PAFZZN
	6/1-25		PAFZZN
	10/1-6		PAFZZN
	10/2-10	17	PAFZZN
FPN4-40SCL	10/2-11	2	PAFZZN
FPN6-32SCL	1/5-89		PAFZZN
	1/5-91		PAFZZN
	1/5-100		PAFZZN
	1/5-102		PAFZZN
	6/1-51		PAFZZN
	6/2-54	12	PAFZZN
F02A250V1-4AS	10/2-30	3	PAFZZN
F02A250V3AS	11-9	3	PAFZZN
F02A250V5AS	10/2-31	3	PAFZZN
F9000H-3	1/1-10	1	PAFZZ-
H-216/U	1/6-153	1	
HP176-9J	1/1-63	1	XBDDD-
H10-30	1/6-160	1	PAFZZN
H2411-2AL	6/4-82	1	PAFZZN
H38-0.064-0.251	18/1-1	2	
J-38	1/6-154	1	
JJ022	16-13	4	PAFZZN
JN17-4327A	8/2-22		PAFZZN
	9/1-48		PAFZZN
	9/1-59	6	PAFZZN
JT01RE-12-98PSR	12/2-55	1	PAFZZN
JT01RE-14-35SBSR	12/5-134	1	PAFZZN
JW17-4435A	8/2-21	60	PAFZZN
JW33-1085B	8/2-20	60	PAFZZN
KN-19-159	12/4-125	1	PAFZZN
LCDA11	10/2-17	2	PAFFFP
LC051G75S	F6-148	2	PAFZZN
LE-045D-6SS	1/1-149	1	PAFZZN
LW1023-1-6-0	1/1-49		PAFZZN
	5-26		PAFZZN
	16-7	4	PAFZZN
L250HP	1/4-39		PAFZZN
	1/4-43	2	PAFZZN
MODEL NO. 2106-7	1/6-156	1	PAFZZN
MFC1000T-LC0	1/2-113	1	PAFLDT
MS122121	5-17	2	PAFZZN
MS15795-802	F9-52	4	PAFZZN
MS15795-803	F1-66		PAFZZN
	F1-78		PAFZZN
	F2-5		PAFZZN
	F2-9		PAFZZN
	6/1-58		PAFZZN
	F6-66		PAFZZN
	F6-129		PAFZZN
	F6-136		PAFZZN
	F7-3		PAFZZN
	F8-7		PAFZZN

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
MS15795-803	F8-62		PAFZZN
	F8-63		PAFZZN
	F12-10		PAFZZN
	F12-11		PAFZZN
	15-		PAFZZN
	F15-8		PAFZZN
	F15-8		PAFZZN
	F16-3		PAFZZN
	F16-4		PAFZZN
	F16-10		PAFZZN
	F16-12		PAFZZN
	F16-13		PAFZZN
	F16-16		PAFZZN
	F16-17		PAFZZN
	F16-19		PAFZZN
	F17-20		PAFZZN
	F18-1	265	PAFZZN
MS15795-805	F1-21		PAFZZN
	F1-33		PAFZZN
	F1-37		PAFZZN
	F1-86		PAFZZN
	F1-97		PAFZZN
	F1-135		PAFZZN
	F6-28		PAFZZN
	F6-36		PAFZZN
	F6-48		PAFZZN
	F6-49		PAFZZN
	F6-50		PAFZZN
	F6-138		PAFZZN
	F6-139		PAFZZN
	F6-155		PAFZZN
	F8-7		PAFZZN
	F8-9		PAFZZN
	F8-11		PAFZZN
	F8-13		PAFZZN
	F8-15		PAFZZN
	F8-17		PAFZZN
	F8-41		PAFZZN
	F8-42		PAFZZN
	F8-43		PAFZZN
	9-		PAFZZN
	F9-10		PAFZZN
	F9-18		PAFZZN
	F9-24		PAFZZN
	F9-29		PAFZZN
	F9-30		PAFZZN
	F9-40		PAFZZN
	F9-41		PAFZZN
	F9-44		PAFZZN
	F9-50		PAFZZN
	F9-53		PAFZZN
	F9-54		PAFZZN
	F9-55		PAFZZN
	F9-56		PAFZZN
	F10-27		PAFZZN
	F10-67		PAFZZN
	F10-84		PAFZZN
	F11-8		PAFZZN
MS15795-805	F12-17		PAFZZN
	F12-18		PAFZZN
	F12-49		PAFZZN
	F13-52		PAFZZN
	F14-60		PAFZZN
	F15-7		PAFZZN
	F15-11		PAFZZN
	F16-4		PAFZZN
	F16-11		PAFZZN
	F16-18		PAFZZN
	F18-3		PAFZZN
	F18-4	292	PAFZZN
MS15795-807	F1-17		PAFZZN
	F1-124		PAFZZN
	F1-129		PAFZZN
	F1-133		PAFZZN
	F1-144		PAFZZN
	F1-145		PAFZZN
	F1-147		PAFZZN
	F1-150		PAFZZN
	F2-1		PAFZZN
	F2-2		PAFZZN
	F6-5		PAFZZN
	F6-7		PAFZZN
	F6-12		PAFZZN
	F6-35		PAFZZN
	F6-76		PAFZZN
	F6-79		PAFZZN
	F8-36		PAFZZN
	F9-39		PAFZZN
	F9-74		PAFZZN
	F10-97		PAFZZN
	F16-15		PAFZZN
	F17-4	176	PAFZZN
MS15795-808	F1-16		PAFZZN
	F1-18		PAFZZN
	F1-21		PAFZZN
	F1-25		PAFZZN
	F1-33		PAFZZN
	F1-86		PAFZZN
	F1-88		PAFZZN
	F1-90		PAFZZN
	F1-97		PAFZZN
	F1-104		PAFZZN
	F1-107		PAFZZN
	F1-118		PAFZZN
	F1-148		PAFZZN
	F3-1		PAFZZN
	F5-2		PAFZZN
	F5-11		PAFZZN
	F5-26		PAFZZN
	F5-29		PAFZZN
	F6-1		PAFZZN
	F6-3		PAFZZN
	F6-4		PAFZZN
	F6-18		PAFZZN
	F6-22		PAFZZN
	F6-22		PAFZZN

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
MS15795-808	F6-29		PAFZZN
	F6-36		PAFZZN
	F6-47		PAFZZN
	F6-50		PAFZZN
	F6-53		PAFZZN
	F6-61		PAFZZN
	F6-61		PAFZZN
	F6-74		PAFZZN
	F6-80		PAFZZN
	6/2-88		PAFZZN
	6/2-92		PAFZZN
	F6-95		PAFZZN
	F6-95		PAFZZN
	F6-99		PAFZZN
	F6-107		PAFZZN
	F6-111		PAFZZN
	F6-111		PAFZZN
	F6-111		PAFZZN
	F6-122		PAFZZN
	F6-122		PAFZZN
	F6-143		PAFZZN
	F6-188		PAFZZN
	F6-190		PAFZZN
	F8-2		PAFZZN
	F8-4		PAFZZN
	F8-23		PAFZZN
	F8-51		PAFZZN
	9/2-73		PAFZZN
	10/1-2		PAFZZN
	F10-3		PAFZZN
	F10-5		PAFZZN
	F10-8		PAFZZN
	F10-9		PAFZZN
	F10-14		PAFZZN
	F10-16		PAFZZN
	F10-20		PAFZZN
	10/2-22		PAFZZN
	F10-24		PAFZZN
	F10-26		PAFZZN
	F10-26A		PAFZZN
	F10-39		PAFZZN
	F10-41		PAFZZN
	F10-42		PAFZZN
	F10-43		PAFZZN
	F10-44		PAFZZN
	F10-45		PAFZZN
	F10-46		PAFZZN
	F10-47		PAFZZN
	F10-48		PAFZZN
	10-54A		PAFZZN
	F10-55		PAFZZN
	F10-56		PAFZZN
	F10-56A		PAFZZN
	F10-56B		PAFZZN
	F10-57		PAFZZN
	F10-59		PAFZZN
	F10-86B		PAFZZN
	F10-96A		PAFZZN
MS15795-808	F11-13		PAFZZN
	12-		PAFZZN
	F12-20		PAFZZN
	F12-22		PAFZZN
	F12-26		PAFZZN
	F12-30		PAFZZN
	F12-33		PAFZZN
	F12-40		PAFZZN
	F12-41		PAFZZN
	F12-42		PAFZZN
	F12-43		PAFZZN
	F12-44		PAFZZN
	F12-45		PAFZZN
	F12-46		PAFZZN
	F12-47		PAFZZN
	F12-48		PAFZZN
	F12-50		PAFZZN
	F12-51		PAFZZN
	F12-52		PAFZZN
	F12-53		PAFZZN
	F12-177		PAFZZN
	12/6-180		PAFZZN
	F18-7		PAFZZN
	F18-13	637	PAFZZN
MS15795-810	F1-49		PAFZZN
	F1-51		PAFZZN
	F1-123		PAFZZN
	F1-128		PAFZZN
	5-9		PAFZZN
	F5-16		PAFZZN
	F6-69		PAFZZN
	F6-116		PAFZZN
	F6-140		PAFZZN
	6/5-213		PAFZZN
	F9-61		PAFZZN
	F9-70		PAFZZN
	F12-39		PAFZZN
	F19-1		PAFZZN
	F19-7		PAFZZN
	F19-9	97	PAFZZN
MS15795-812	F1-53		PAFZZN
	F1-58		PAFZZN
	F5-38		PAFZZN
	F6-27A		PAFZZN
	F6-29		PAFZZN
	F6-29A		PAFZZN
	F6-36		PAFZZN
	F6-70		PAFZZN
	F6-71		PAFZZN
	F6-72		PAFZZN
	F6-99		PAFZZN
	F6-116		PAFZZN
	F6-166		PAFZZN
	F19-3	50	PAFZZN
MS15795-814	F9-65	4	PAFZZN
MS16535-154	F9-5	1	PAFZZN
MS16562-223	10/1-90	1	PAFZZN
MS16562-229	10/4-65		PAFZZN

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MS16562-229	10/4-72	4	PAFZZN
MS16632-1025	6/4-169	2	PAFZZN
MS16997-61	10/4-80		PAFZZN
	10/1-98	2	PAFZZN
MS16998-45	F6-105		PAFZZN
	F19-1	40	PAFZZN
MS17830-4C	F1-38		PAFZZN
	F1-42		PAFZZN
	F1-128		PAFZZN
	F4-3		PAFZZN
	7-14		PAFZZN
	10/1-34		PAFZZN
	10/1-49		PAFZZN
	F19-7		PAFZZN
	F19-9	18	PAFZZN
MS17830-5C	1/2-32		PAFZZN
	F5-38		PAFZZN
	F17-5	5	PAFZZN
MS17830-6C	F6-148	2	PAFZZN
MS18029-159	12/1-32	5	XBDZZ-
MS20257-5-7200	9/1-2		PAFZZN
	9/1-4		PAFZZN
	11-14	4	PAFZZN
MS20257H5-7200	9/1-3		PAFZZN
	9/1-15	5	PAFZZN
MS20426AD3-4	5-3		PAFZZN
	F17-6		PAFZZN
	F17-7		PAFZZN
	F17-17		PAFZZN
	F17-18	66	PAFZZN
MS20426AD3-5	1/3-27		PAFZZN
	6/3-17		PAFZZN
	9/2-76		PAFZZN
	F17-8		PAFZZN
	F17-9		PAFZZN
	F17-11		PAFZZN
	F17-12		PAFZZN
	17/2-19	125	PAFZZN
MS20426AD3-6	F3-2		PAFZZN
	F8-47		PAFZZN
	F8-49		PAFZZN
	F8-53		PAFZZN
	12/1-2	98	PAFZZN
MS20426AD4-4	F6-51		PAFZZN
	F6-54		PAFZZN
	6/3-97	32	PAFZZN
MS20426AD4-6	6/3-40	3	PAFZZN
MS20426AD5-8	F6-40	8	PAFZZN
MS20470AD3-4	F6-37		PAFZZN
	F9-41		PAFZZN
	F9-42	6	PAFZZN
MS20470AD3-5	F9-23	8	PAFZZN
MS20470AD3-6	F8-45	8	PAFZZN
MS20470AD4-4	16-21	24	PAFZZN
MS20470AD4-5	F9-1		PAFZZN
	F9-14	12	PAFZZN
MS20470AD4-7	10/4-76		PAFZZN
	10/1-94	6	PAFZZN
MS21044C04	F1-49		PAFZZN
	F1-66		PAFZZN
	F1-78		PAFZZN
	6/1-59		PAFZZN
	F6-66		PAFZZN
	F6-129		PAFZZN
	F7-3		PAFZZN
	F8-26		PAFZZN
	F8-62		PAFZZN
	F8-63		PAFZZN
	F16-3		PAFZZN
	F16-4		PAFZZN
	F16-10		PAFZZN
	F16-12		PAFZZN
	F16-13		PAFZZN
	F16-17		PAFZZN
	F16-19		PAFZZN
	F17-20	66	PAFZZN
MS21044C06	F1-33		PAFZZN
	F1-37		PAFZZN
	F6-36		PAFZZN
	F6-138		PAFZZN
	F6-139		PAFZZN
	F6-155		PAFZZN
	F8-41		PAFZZN
	F8-43		PAFZZN
	F12-18		PAFZZN
	F12-49		PAFZZN
	F16-4		PAFZZN
	F16-11		PAFZZN
	F16-18	37	PAFZZN
MS21044C08	F6-35		PAFZZN
	F6-76		PAFZZN
	F8-36		PAFZZN
	F10-97	15	PAFZZN
MS21044C3	F1-148		PAFZZN
	F8-44		PAFZZN
	F8-51		PAFZZN
	F10-9		PAFZZN
	F10-16		PAFZZN
	F10-20		PAFZZN
	10/2-23		PAFZZN
	F10-39		PAFZZN
	F10-41		PAFZZN
	F10-42		PAFZZN
	F10-43		PAFZZN
	F10-44		PAFZZN
	F10-47		PAFZZN
	F10-48		PAFZZN
	F10-54A		PAFZZN
	F10-55		PAFZZN
	F10-56		PAFZZN
	F10-56A		PAFZZN
	F10-56B		PAFZZN
	F10-57		PAFZZN
	F10-59		PAFZZN
	F11-13		PAFZZN
	F12-44		PAFZZN

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MS21044C3	F12-52		PAFZZN
	F12-53		PAFZZN
	F17-1		PAFZZN
	F17-3	65	PAFZZN
MS21044C4	F1-51		PAFZZN
	F6-116	5	PAFZZN
MS21075L06	8/1-45		PAFZZN
	F9-23	8	PAFZZN
MS21266-1N	6/2-123	AR	PAFZZN
MS21266-2N	6/1-23	AR	PAFZZN
	6/3-38	AR	PAFZZN
	6/4-84	AR	PAFZZN
	12/1-38	AR	PAFZZN
	18/1-21	2	PAFZZN
MS21266-3N	6/2-46	AR	PAFZZN
	6/1-62	AR	PAFZZN
	6/1-64	1	PAFZZN
	6/1-68	AR	PAFZZN
	10/1-5	AR	PAFZZN
	10/4-60	AR	PAFZZN
	12/1-188	AR	PAFZZN
MS21326-1	6/4-185	2	PAFZZN
MS21332-41	6/4-177	2	PAFZZN
MS24510A10	11-13	1	PAFZZN
MS24510A5	11-12	7	PAFZZN
MS24628-24	F6-181	28	PAFZZN
MS24679-25	5-6		PAFZZN
	F9-61		PAFZZN
	F9-70	4	PAFZZN
MS24680-25	F6-140	6	PAFZZN
MS24693S122	F6-165	8	PAFZZN
MS25036-101	9/1-51		PAFZZN
	9/1-53		PAFZZN
	10/5-122		PAFZZN
	10/5-126		PAFZZN
	10/5-131		PAFZZN
	12/3-59		PAFZZN
	12/3-64		PAFZZN
	12/3-69		PAFZZN
	12/3-73		PAFZZN
	12/3-77		PAFZZN
	12/3-80		PAFZZN
	12/3-83		PAFZZN
	12/4-85		PAFZZN
	12/3-87		PAFZZN
	12/3-91		PAFZZN
	12/3-94		PAFZZN
	12/3-97		PAFZZN
	12/3-100		PAFZZN
	13/2-23		PAFZZN
	13/3-42		PAFZZN
	13/3-46		PAFZZN
	14/3-43		PAFZZN
	14/3-50	103	PAFZZN
MS25036-106	10/1-103	2	PAFZZN
MS25036-111	12/4-103	4	PAFZZN
MS25036-112	6/6-131	4	PAFZZN
MS25036-114	5-23	1	PAFZZN
MS25036-120	10/1-36	1	PAFZZN
MS25036-149	12/2-12	2	PAFZZN
MS25036-157	5-10		PAFZZN
	6/6-126		PAFZZN
	6/6-132	3	PAFZZN
MS25281R10	12/2-20	1	PAFZZN
MS25281R12	10/1-43	1	PAFZZN
MS25281R13	10/2-26A		PAFZZN
	10/4-59	5	PAFZZN
MS25281R2	9/1-54		PAFZZN
	10/2-27A		PAFZZN
	10/3-47		PAFZZN
	12/2-22	6	PAFZZN
MS25281R4	1/3-24		PAFZZN
	1/3-26		PAFZZN
	2-1	3	PAFZZN
MS25281R5	1/3-18		PAFZZN
	10/1-42	2	PAFZZN
MS25281R7	2-2		PAFZZN
	10/1-44		PAFZZN
	10/3-48	4	PAFZZN
MS25281R8	6/2-122		PAFZZN
	10-55	4	PAFZZN
MS25281R9	6/1-22	3	PAFZZN
MS27212-1-9	10/2-9		PAFZZN
	10/2-25		PAFZZN
	12/1-33	9	PAFZZN
MS27484T12F98S	12/3-61	1	PAFZZN
MS27484T14F35PB	12/5-141	1	PAFZZN
MS27484T16F6S	6/6-134	1	PAFZZN
MS27506F12-2	12/3-60	1	PAFZZN
MS27506F16-2	6/6-133	1	PAFZZN
MS27508E16F6P	6/6-128	1	PAFZZN
MS27735-23	9/3-43		PAFZZN
	11-11	2	PAFZZN
MS3057-6A	12/3-65	1	PAFZZN
MS3106A14S7S	12/3-66	1	PAFZZN
MS3106E14S-2SX	10/6-148	1	PAFZZN
MS3106E14S-5P	10/6-155	1	PAFZZN
MS3106E14S2P	10/6-144	1	PAFZZN
MS3106E14S2PY	10/5-113		PAFZZN
	10/5-118	2	PAFZZN
MS3106E14S7P	10/6-138	1	PAFZZN
MS3106E16S-1S	10/7-161	1	PAFZZN
MS3106F10SL3S	12/3-88	1	PAFZZN
MS3106R18-11S	6/6-127	1	PAFZZN
MS3110E14-19P	10/7-166		PAFZZN
	16-10		PAFZZN
	16-17	3	PAFZZN
MS3112E12-3P	15-8	1	PAFZZN
MS3112E14-19S	16-19	1	PAFZZN
MS3112E16-26S	14/2-5	1	PAFZZN
MS3115-14A	16-4	1	PAFZZN
MS3116F10-6P	1/6-157	1	PAFZZN
MS3116F12-3S	12/3-70		PAFZZN
	12/3-74	2	PAFZZN
MS3116F14-12S	12/2-56	1	PAFZZN
MS3116F14-19P	10/7-170	1	PAFZZN

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MS3116F14-19S	1/7-167		PAFZZN
	12/5-142		PAFZZN
	16-9	3	PAFZZN
MS3116F16-26P	1/7-166		PAFZZN
	12/5-133	2	PAFZZN
MS3116F22-55S	14/3-57	1	PAFZZN
MS3116F8-4S	10/5-127		PAFZZN
	10/5-132	2	PAFZZN
MS3181-20C	8/1-62	1	PAFZZN
MS3181-20N	5-27	1	PAFZZN
MS3367-1-0	13/2-22	AR	PAFZZN
	13/1-53		PAFZZN
	14/1-59	40	PAFZZN
MS3367-1-9	1/4-68		PAFZZN
	1/4-70		PAFZZN
	1/4-72		PAFZZN
	1/5-80		PAFZZN
	1/5-82		PAFZZN
	1/5-84		PAFZZN
	1/7-172		PAFZZN
	1/7-177	36	PAFZZN
MS3367-4-0	14/2-25	AR	PAFZZN
	14/3-36	AR	PAFZZN
	14/3-42	AR	PAFZZN
	14/3-49	AR	PAFZZN
	14/3-56	AR	PAFZZN
	15-4	3	PAFZZN
MS3367-4-9	1/2-106		PAFZZN
	1/2-109		PAFZZN
	1/2-121	5	PAFZZN
MS35307-315	F19-7		PAFZZN
	F19-9	8	PAFZZN
MS35307-333	F5-38	2	PAFZZN
MS35307-334	F6-99	2	PAFZZN
MS35307-335	F6-36	3	PAFZZN
MS35307-336	F6-27A		PAFZZN
	F6-29		PAFZZN
	F6-29A		PAFZZN
	F6-116	22	PAFZZN
MS35307-337	F6-70		PAFZZN
	F6-71		PAFZZN
	F6-72		PAFZZN
	F6-166		PAFZZN
	F19-3	16	PAFZZN
MS35338-101	12/6-183	2	PAFZZN
MS35338-134	F9-52	2	PAFZZN
MS35338-135	F2-5		PAFZZN
	F2-9		PAFZZN
	F6-136		PAFZZN
	F8-7		PAFZZN
	F8-33		PAFZZN
	F8-34		PAFZZN
	F8-35		PAFZZN
	F12-1		PAFZZN
	F12-10		PAFZZN
	15-		PAFZZN
	F15-8		PAFZZN
	F15-8		PAFZZN
MS35338-135	F18-1	172	PAFZZN
MS35338-136	F6-28		PAFZZN
	F8-25		PAFZZN
	9-		PAFZZN
	F9-10		PAFZZN
	F9-24		PAFZZN
	F9-29		PAFZZN
	F9-30		PAFZZN
	F9-40		PAFZZN
	F9-41		PAFZZN
	F9-44		PAFZZN
	F9-50		PAFZZN
	F9-53		PAFZZN
	F9-54		PAFZZN
	F9-55		PAFZZN
	F9-56		PAFZZN
	F13-52		PAFZZN
	F14-60		PAFZZN
	F15-7		PAFZZN
	F15-11		PAFZZN
	F18-3		PAFZZN
	F18-4	104	PAFZZN
MS35338-137	F1-17		PAFZZN
	F1-124		PAFZZN
	F1-129		PAFZZN
	F1-133		PAFZZN
	F1-144		PAFZZN
	F1-145		PAFZZN
	F1-147		PAFZZN
	F1-150		PAFZZN
	F2-1		PAFZZN
	F2-2		PAFZZN
	F6-143		PAFZZN
	F9-39		PAFZZN
	F17-4	59	PAFZZN
MS35338-138	F1-16		PAFZZN
	F1-18		PAFZZN
	F1-21		PAFZZN
	F1-25		PAFZZN
	F1-33		PAFZZN
	F1-86		PAFZZN
	F1-88		PAFZZN
	F1-90		PAFZZN
	F1-97		PAFZZN
	F1-104		PAFZZN
	F1-107		PAFZZN
	F1-118		PAFZZN
	F3-1		PAFZZN
	F5-11		PAFZZN
	F5-29		PAFZZN
	F6-1		PAFZZN
	F6-3		PAFZZN
	F6-4		PAFZZN
	F6-18		PAFZZN
	F6-22		PAFZZN
	F6-22		PAFZZN
	F6-29		PAFZZN
	F6-30		PAFZZN

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MS35338-138	F6-36		PAFZZN
	F6-47		PAFZZN
	F6-50		PAFZZN
	F6-53		PAFZZN
	F6-61		PAFZZN
	F6-80		PAFZZN
	6/2-87		PAFZZN
	6/2-91		PAFZZN
	F6-95		PAFZZN
	F6-95		PAFZZN
	F6-99		PAFZZN
	F6-107		PAFZZN
	F6-111		PAFZZN
	F6-111		PAFZZN
	F6-111		PAFZZN
	F6-122		PAFZZN
	F6-122		PAFZZN
	F6-188		PAFZZN
	F6-190		PAFZZN
	F9-53		PAFZZN
	9/2-72		PAFZZN
	F10-5		PAFZZN
	F10-45		PAFZZN
	F10-46		PAFZZN
	F10-96A		PAFZZN
	F12-20		PAFZZN
	F12-22		PAFZZN
	F12-30		PAFZZN
	F12-33		PAFZZN
	F12-40		PAFZZN
	F12-41		PAFZZN
	F12-42		PAFZZN
	F12-43		PAFZZN
	F12-45		PAFZZN
	F12-46		PAFZZN
	F12-47		PAFZZN
	F12-48		PAFZZN
	F12-50		PAFZZN
	F12-51		PAFZZN
	F12-177		PAFZZN
	12/6-181		PAFZZN
	F18-7		PAFZZN
	F18-8		PAFZZN
	F18-9		PAFZZN
	F18-11		PAFZZN
	F18-13	425	PAFZZN
MS35338-139	F1-123		PAFZZN
	F1-128		PAFZZN
	5-8		PAFZZN
	F5-16		PAFZZN
	F6-105		PAFZZN
	F6-140		PAFZZN
	6/5-212		PAFZZN
	F9-61		PAFZZN
	F9-70		PAFZZN
	10/4-81		PAFZZN
	10/1-99		PAFZZN
	F12-39		PAFZZN
MS35338-139	F19-1		PAFZZN
	F19-5	78	PAFZZN
MS35338-140	F1-53		PAFZZN
	F1-58		PAFZZN
	F6-27A		PAFZZN
	F6-29		PAFZZN
	F6-29A		PAFZZN
	F6-36		PAFZZN
	F6-70		PAFZZN
	F6-71		PAFZZN
	F6-72		PAFZZN
	F6-99		PAFZZN
	F6-116		PAFZZN
	F19-3	47	PAFZZN
MS35338-141	F9-65	4	PAFZZN
MS35489-14	1/1-132	2	PAFZZN
MS35489-19	8/2-36	1	PAFZZN
MS35489-35	10/1-4		PAFZZN
	10/4-58	2	PAFZZN
MS35489-48	6/4-76	1	PAFZZN
MS35649-224	F9-52	2	PAFZZN
MS35649-244	F2-5		PAFZZN
	F6-136		PAFZZN
	F8-7		PAFZZN
	F15-8		PAFZZN
	F18-1	21	PAFZZN
MS35649-264	9-		PAFZZN
	F9-10		PAFZZN
	F15-7		PAFZZN
	F18-3		PAFZZN
	F18-4	36	PAFZZN
MS35649-284	F1-17		PAFZZN
	F1-124		PAFZZN
	F2-1		PAFZZN
	F2-2	7	PAFZZN
MS35650-304	F1-16		PAFZZN
	F1-21		PAFZZN
	F1-25		PAFZZN
	F6-61		PAFZZN
	F6-61		PAFZZN
	F18-8		PAFZZN
	F18-9		PAFZZN
	F18-11	32	PAFZZN
MS51929-2	1/3-5		PAOZZN
	1/1-8		PAOZZN
	1/2-139	3	PAFZZN
MS51957-14	F2-5	1	PAFZZN
MS51957-15	F6-66		PAFZZN
	F6-129		PAFZZN
	F8-33		PAFZZN
	F8-34		PAFZZN
	F8-35		PAFZZN
	F10-9		PAFZZN
	F12-11		PAFZZN
	15-		PAFZZN
	F15-8		PAFZZN
	F15-8		PAFZZN
	F16-16		PAFZZN

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MS51957-15	F16-17		PAFZZN
	F16-19	50	PAFZZN
MS51957-16	F10-25		PAFZZN
	F15-4		PAFZZN
	F17-20	6	PAFZZN
MS51957-17	F8-63		PAFZZN
	F16-4		PAFZZN
	F16-12		PAFZZN
	F16-13		PAFZZN
	F17-20	19	PAFZZN
MS51957-18	F7-3		PAFZZN
	F8-62	9	PAFZZN
MS51957-19	F8-7	122	PAFZZN
MS51957-22	F8-9	4	PAFZZN
MS51957-25	F8-7		PAFZZN
	F8-9		PAFZZN
	F8-11		PAFZZN
	F8-13		PAFZZN
	F8-15		PAFZZN
	F8-17	12	PAFZZN
MS51957-26	F1-135		PAFZZN
	5-30		PAFZZN
	F9-50	6	PAFZZN
MS51957-27	F1-21		PAFZZN
	F6-28		PAFZZN
	F11-8	10	PAFZZN
MS51957-28	F1-33		PAFZZN
	5-19		PAFZZN
	F6-48		PAFZZN
	F6-49		PAFZZN
	8/1-42		PAFZZN
	F9-44		PAFZZN
	F9-56		PAFZZN
	F15-11	42	PAFZZN
MS51957-29	8/1-41		PAFZZN
	F9-10		PAFZZN
	F9-29		PAFZZN
	F9-30		PAFZZN
	F9-40		PAFZZN
	F9-41		PAFZZN
	F9-54		PAFZZN
	F16-11		PAFZZN
	F16-18	38	PAFZZN
MS51957-3	F1-66		PAFZZN
	F1-78	4	PAFZZN
MS51957-30	F7-6		PAFZZN
	F10-67		PAFZZN
	F10-84		PAFZZN
	F12-6		PAFZZN
	F12-7		PAFZZN
	F12-7		PAFZZN
	F12-15		PAFZZN
	F12-16		PAFZZN
	F12-17		PAFZZN
	F12-18		PAFZZN
	F12-49		PAFZZN
	F13-52		PAFZZN
	F14-60	84	PAFZZN
MS51957-31	F1-86		PAFZZN
	F1-97		PAFZZN
	8/2-43		PAFZZN
	F15-7		PAFZZN
	F16-4	8	PAFZZN
MS51957-32	9-		PAFZZN
	F9-24	20	PAFZZN
MS51957-33	F9-18	4	PAFZZN
MS51957-34	F9-55	2	PAFZZN
MS51957-35	F10-27	6	PAFZZN
MS51957-4	F9-52	2	PAFZZN
MS51957-40	F10-79		PAFZZN
	F10-97	4	PAFZZN
MS51957-42	F1-129		PAFZZN
	F1-133	4	PAFZZN
MS51957-43	F1-124	1	PAFZZN
MS51957-44	F9-39		PAFZZN
	F10-79		PAFZZN
	F10-97	10	PAFZZN
MS51957-45	F1-111		PAFZZN
	F1-112		PAFZZN
	F18-10	44	PAFZZN
MS51957-46	F1-144		PAFZZN
	F1-145		PAFZZN
	F1-150		PAFZZN
	F2-1		PAFZZN
	F2-2		PAFZZN
	F6-74		PAFZZN
	F6-76		PAFZZN
	F6-79		PAFZZN
	F8-36		PAFZZN
	F16-15	42	PAFZZN
MS51957-47	F1-147		PAFZZN
	F17-4	17	PAFZZN
MS51957-48	F6-143	16	PAFZZN
MS51957-50	F6-5	16	PAFZZN
MS51957-55	F9-74	18	PAFZZN
MS51957-80	6/5-211	2	PAFZZN
MS51957-81	F1-128		PAFZZN
	F10-14		PAFZZN
	F10-33		PAFZZN
	12/6-179	9	PAFZZN
MS51957-83	F5-16	2	PAFZZN
MS51958-60	9/2-71		PAFZZN
	F10-3		PAFZZN
	F10-5		PAFZZN
	F10-45		PAFZZN
	F12-50	26	PAFZZN
MS51958-61	F5-26		PAFZZN
	F5-29		PAFZZN
	F6-36		PAFZZN
	F12-26		PAFZZN
	F12-40		PAFZZN
	F12-41		PAFZZN
	F12-42		PAFZZN
	F12-43		PAFZZN
	F12-45		PAFZZN
	F12-46		PAFZZN

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MS51958-61	F12-51		PAFZZN
	F18-7	68	PAFZZN
MS51958-62	F1-96		PAFZZN
	F1-138		PAFZZN
	F5-26		PAFZZN
	F6-18		PAFZZN
	10/1-1		PAFZZN
	F18-8		PAFZZN
	F18-9	22	PAFZZN
MS51958-63	F3-1		PAFZZN
	F6-95		PAFZZN
	F8-4		PAFZZN
	F8-23		PAFZZN
	F10-8		PAFZZN
	F10-86B		PAFZZN
	12-	70	PAFZZN
MS51958-64	F1-18		PAFZZN
	F1-86		PAFZZN
	F1-97		PAFZZN
	F1-104		PAFZZN
	F1-107		PAFZZN
	F1-118		PAFDDN
	F5-2		PAFZZN
	F6-4		PAFZZN
	F6-30		PAFZZN
	F6-47		PAFZZN
	6/2-90		PAFZZN
	F6-107		PAFZZN
	F6-111		PAFZZN
	F6-122		PAFZZN
	F6-122		PAFZZN
	F8-2		PAFZZN
	F8-51		PAFZZN
	F10-14		PAFZZN
	10/2-21		PAFZZN
	F10-24		PAFZZN
	F10-26		PAFZZN
	F10-26A		PAFZZN
	F10-46		PAFZZN
	F10-96A		PAFZZN
	F12-20		PAFZZN
	F12-22		PAFZZN
	F12-33		PAFZZN
	F12-40		PAFZZN
	F12-41		PAFZZN
	F12-42		
	F12-43		PAFZZN
	F12-44		PAFZZN
	F12-47		PAFZZN
	F12-48		PAFZZN
	F12-50		PAFZZN
	F12-51		PAFZZN
	F12-52		PAFZZN
	F12-53		PAFZZN
	F12-177		PAFZZN
	F18-13	198	PAFZZN
MS51958-65	F5-11		PAFZZN
	F6-3		PAFZZN
MS51958-65	F6-18		PAFZZN
	F6-22		PAFZZN
	F6-22		PAFZZN
	F6-61		PAFZZN
	F6-61		PAFZZN
	F6-80		PAFZZN
	6/2-86		PAFZZN
	F6-99		PAFZZN
	F6-111		PAFZZN
	F6-188	98	PAFZZN
MS51958-66	F1-33		PAFZZN
	F1-88		PAFZZN
	F1-90		PAFZZN
	F1-101		PAFZZN
	F6-50		PAFZZN
	F6-53		PAFZZN
	F6-95		PAFZZN
	F12-30	49	PAFZZN
MS51958-67	F6-1		PAFZZN
	F6-111		PAFZZN
	F6-190	20	PAFZZN
MS51958-75	F1-148	1	PAFZZN
MS51958-81	F1-123		PAFZZN
	F6-69	34	PAFZZN
MS51959-14	F6-120		PAFZZN
	F6-136	14	PAFZZN
MS51959-15	6/1-57		PAFZZN
	F8-26		PAFZZN
	F16-3		PAFZZN
	F16-10	16	PAFZZN
MS51959-16	F12-10		PAFZZN
	F18-1	14	PAFZZN
MS51959-17	F12-1	5	PAFZZN
MS51959-26	F6-144		PAFZZN
	F6-149		PAFZZN
	F6-150		PAFZZN
	F18-12	23	PAFZZN
MS51959-28	F9-21		PAFZZN
	F10-40	10	PAFZZN
MS51959-29	F6-138		PAFZZN
	F6-139		PAFZZN
	F18-15		PAFZZN
	F18-17		PAFZZN
	F18-18	27	PAFZZN
MS51959-30	F1-37		PAFZZN
	F18-3		PAFZZN
	F18-4		PAFZZN
	F18-14		PAFZZN
	F18-16	29	PAFZZN
MS51959-31	F6-155		PAFZZN
	F6-184		PAFZZN
	F10-32	14	PAFZZN
MS51959-40	F6-153	6	PAFZZN
MS51959-42	F10-17	4	PAFZZN
MS51959-43	F1-124	1	PAFZZN
MS51959-45	F6-15		PAFZZN
	6-94		PAFZZN
	F6-117	15	PAFZZN

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
MS51959-46	F1-17	4	PAFZZN
MS51959-79	F18-2	2	PAFZZN
MS51959-81	F6-153	8	PAFZZN
MS51960-62	F18-11	4	PAFZZN
MS51960-64	F1-16		PAFZZN
	F5-36		PAFZZN
	F10-18		PAFZZN
	F10-19		PAFZZN
	F10-86A	24	PAFZZN
MS51960-65	F5-35	4	PAFZZN
MS51960-66	8/1-44	4	PAFZZN
MS51960-67	F6-168	10	PAFZZN
MS51960-68	F6-167		PAFZZN
	F6-168	4	PAFZZN
MS77068-1	2-5		PAFZZN
	8/2-33	3	PAFZZN
MS90725-33	F1-53		PAFZZN
	F1-58	5	PAFZZN
MS90725-44	F17-5	2	PAFZZN
MS90725-6	F1-38		PAFZZN
	F1-42	2	PAFZZN
MS90725-64	F9-65	4	PAFZZN
MS90726-16	F1-49	1	PAFZZN
MS90726-57	F6-34		PAFZZN
	F6-82	6	PAFZZN
MS90727-18	F19-5		PAFZZN
	F19-11	20	PAFZZN
MS91528-1K2B	11-6	1	PAFZZN
M15733-02-0004	6/4-85	4	PAFZZN
M15733-02-0006	10/3-54	4	PAFZZN
M17-028RG058	9/1-68	AR	PAFZZN
	13/2-6	AR	PAFZZN
	13/2-9	AR	PAFZZN
	14/2-9	AR	PAFZZN
	14/2-12	AR	PAFZZN
M23053-5-109-0	1/5-87		PAFZZN
	1/5-98	4	PAFZZN
M24308/26-1	F2-3		PAFZZN
	6/1-67		PAFZZN
	F15-3		PAFZZN
	F15-6	8	PAFZZN
M39012-01-0005	1/4-65		PAFZZN
	1/5-77		PAFZZN
	12/4-120	4	PAFZZN
M39012-02-0003	1/4-74	1	PAFZZN
M39012-06-0002	12/4-121	1	PAFZZN
M39012-16-0101	9/1-67		PAFZZN
	12/4-110		PAFZZN
	12/4-113		PAFZZN
	12/4-117		PAFZZN
	12/4-124		PAFZZN
	13/2-5		PAFZZN
	13/2-8		PAFZZN
	14/2-8		PAFZZN
	14/2-11	12	PAFZZN
M39012-22-0001	9/1-69	1	PAFZZN
M39012-25-0011	1/4-73		PAFZZN
	5-28		PAFZZN
M39012-25-0011	6/1-66		PAFZZN
	8/1-26	5	PAFZZN
M39019-5-255	11-8	2	PAFZZN
M45938-3-12C	6/3-41		PAFZZN
	6/4-77	2	PAFZZN
M45938-4-10	5-33	10	PAFZZN
M45938-4-5	8/2-8		PAFZZN
	8/2-10		PAFZZN
	8/2-12		PAFZZN
	8/2-14		PAFZZN
	8/2-16		PAFZZN
	8/2-18		PAFZZN
	12/2-25		PAFZZN
	F18-12	19	PAFZZN
M45938-4-6	5-21		PAFZZN
	5-32	6	PAFZZN
M45938-4-7	6/2-101	4	PAFZZN
M45938/5-5	12/1-28	4	PAFZZN
M5423-02-01	9/3-44	1	PAFZZN
M5423-14-05	7-5	1	PAFZZN
NAS1068A08	6-16		
	9/2-77	34	PAFZZN
NAS1068A3	5-4		PAFZZN
	8/2-37		PAFZZN
	8/2-47		PAFZZN
	8/2-49		PAFZZN
	8/1-53		PAFZZN
	12/1-3	59	PAFZZN
NAS1329A08KB120	6/4-187	2	PAFZZN
NAS1329H08B75	6/1-19		PAFZZN
	6/2-102	2	PAFZZN
NAS1330S3B166	5-39		PAFZZN
	6/1-205	52	PAFZZN
NAS1330S3B266	5-12	2	PAFZZN
NAS517-4-25	F1-51	1	PAFZZN
NAS620C10L	F12-6		PAFZZN
	F12-7		PAFZZN
	F12-7		PAFZZN
	F12-15		PAFZZN
	F12-16	24	PAFZZN
NAS620C3	F9-67	4	PAFZZN
NAS620C4	F6-129		PAFZZN
	F8-33		PAFZZN
	F8-34		PAFZZN
	F8-35	24	PAFZZN
NAS620C4L	F10-9		PAFZZN
	F10-25		PAFZZN
	F12-1	9	PAFZZN
NAS620C416	10/4-82		PAFZZN
	10/1-100		PAFZZN
	F19-5	6	PAFZZN
NAS620C6	F8-25	3	PAFZZN
NAS620C8L	6/4-186	2	PAFZZN
NCN10-1-4	1/3-22	1	PAFZZN
NCN6-1-2	1/1-136		PAFZZN
	F9-58		PAFZZN
	15-2		PAFZZN
	15-10	28	PAFZZN

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NCN6-1-3	6/5-145	12	PAFZZN
NCN8-1-4	10/4-75		PAFZZN
	10/1-93	4	PAFZZN
NCS6-3-16	8/1-52	2	PAFZZN
NW512SJ	6/6-135	AR	PAFZZN
NX6120	9/3-28		PAFZZN
	9/3-40	4	PAFZZN
PJ-71	1/6-161	2	PAOZZN
PJ838	12/2-11	1	PAFZZN
PL-259A	6/6-200		
	8/2-31	3	PAFZZN
PT06E10-98PSR	10/6-154	1	PAFZZN
PT06E10-98PWSR	10/7-160	1	PAFZZN
PT06E10-98SSR	10/6-149	1	PAFZZN
PT07A20-39P	8/2-32	1	PAFZZN
P310-0738-070	F1-38		PAFZZN
	F1-42	4	PAFZZN
P312-0073-000	5-11	1	
P312-0253-000	5-15	1	PAFZZN
P312-0259-000	7-17		PAFZZN
	10/1-38		PAFZZN
	12/6-185	3	PAFZZN
P312-0261-000	9/1-70	1	PAFZZN
P312-0262-000	7-13		PAFZZN
	10/1-52	2	PAFZZN
P313-0045-000	F8-25	3	PAFZZN
P313-0082-000	5-7		PAFZZN
	F9-61		PAFZZN
	F9-70	6	PAFZZN
P313-0132-000	F8-33		PAFZZN
	F8-34		PAFZZN
	F8-35		PAFZZN
	F12-1		PAFZZN
	F12-10		PAFZZN
	F12-11	18	PAFZZN
P313-0148-000	7-10		PAFZZN
	7-16		PAFZZN
	10/1-37		PAFZZN
	10/1-51		PAFZZN
	12/6-182	6	PAFZZN
P326-0010-000	F12-39	1	PAFZZN
P342-0242-000	F10-39	4	PAFZZN
P342-0243-000	F7-8	1	PAFZZN
P343-0064-000	F6-50	2	PAFZZN
P343-0194-000	F6-5	18	PAFZZN
QQB575R30T656	1/4-42		PAFZZN
	1/4-46	10	PAFZZN
RCR07G222KS	2-6	8	PAFZZN
RF-02153A	1/4-64		PAFZZN
	1/5-76	3	PAFZZN
RG213U	6/6-202	AR	PAFZZN
	8/2-28	7	PAFZZN
RM52LHA227-40	16-22	12	PAFZZN
SE26XF03	15-7	1	PAFZZN
SL439-433WHT	2-8		PAFZZN
	12/2-24	51	PAFZZN
SM-3	1/6-152	1	
SS10B166	12/1-186	16	PAFZZN
S10B116	6/1-20		PAFZZN
	6/1-24		PAFZZN
	6/3-43		PAFZZN
	6/3-96		PAFZZN
	6/2-100		PAFZZN
	6/1-204		PAFZZN
	6/1-206	62	PAFZZN
S31-425	6/2-207		PAFZZN
	19-4	37	PAFZZN
TA-312	1-19	1	
TA-838	1/1-20	1	
TSEC/KW-7	1/2-122	2	
TSEC/KWX-11	1/2-123	1	
TY10CL1-2 1-2LB	1/1-143	1	PAFZZN
TY37	6/1-4		PAFZZN
	12/1-30	25	PAFZZN
UG-224/U	8/2-29	2	PAFZZN
UG160DU	6/6-201		PAFZZN
	8/1-27	3	PAFZZN
U106U	8/1-61	112	PAFZZN
V-238B/G	7-7	1	PAFZZN
V330-2-100-25YDS	6/1-6		
	6/3-11		
	6/2-104		
	6/2-115	6	
W-L-101/85	6/3-33		PAO---
	6/4-83	5	PAO---
X-129(BUNA-S)	6/1-114	AR	PAFZZN
	18/1-6	AR	PAFZZN
X2-10128BLK	1/4-34		
	1/1-125	4	
YAE10N5	9/2-21	4	PAFZZN
000-0000-030	F10-54A	3	PAFZZN
01308-15	10/5-114	AR	PAFZZN
	10/5-119	AR	PAFZZN
	10/5-123	AR	PAFZZN
	12/3-71	1	PAFZZN
015-1035-000	12/1-177	6	
015-1211-000	4-5	3	PAOZZN
015-1913-000	9/1-1		PAFZZN
	9/1-14	6	PAFZZN
026982	12/1-18	3	PAFZZN
028309	9/2-74	9	PAFZZN
030-1953-000	12/6-151		PAFZZN
	12/6-160		PAFZZN
	12/6-169	211	PAFZZN
070401	9/3-64	1	PAFZZN
070404	F9-61	1	PAFZZN
1IN3STL	1/3-3		PAOZZN
	1/1-7		PAOZZN
	1/2-140	3	PAOZZN
1N752A	2-7	16	PAFZZN
10-101949-20	8/1-64	1	PAFZZN
10-40450-22	7-4	2	PAFZZN
100-200-4-6	6/3-37	1	
101-N1100A	12/4-116	1	PAFZZN
110-5	F7-6		PAFZZN
	F8-43	4	PAFZZN

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110-6	9-		PAFZZN
	F9-24	26	PAFZZN
116	1/2-142	1	PAFZZ-
120-31	F4-6	2	AFF---
1221	10/2-40	1	PAFZZN
1250-02	10/3-56		PAFZZN
	10/3-56A	3	PAFZZN
126-5175-001	16-14	1	PAFZZN
126-5178-001	6/2-108	1	PAFZZN
126-5183-001	7-18	1	XB----
126-5185-001	1/4-75	AR	XA----
	1/5-85	AR	PAFZZN
126-5194-002	10/1-97	1	PAFZZN
126-5215-001	1/7-173	1	XA----
126-5215-002	1/7-178	1	PAOFF-
126-5216-001	1/2-33	1	XB----
140-0045-000	6/4-176	2	PAFZZN
146-103	10/2-29	3	PAFZZN
150-0077-040	12/5-144	3	PAFZZN
150-0708-020	10/2-20	4	PAFZZN
150-0708-030	10/2-8		PAFZZN
	10/2-24	3	PAFZZN
150-0708-060	10/2-26	1	PAFZZN
150-0708-100	10/1-41	2	PAFZZN
152-0077-010	13/2-20	2	PAFZZN
152-0077-020	1/7-165		PAFZZN
	6/6-130		PAFZZN
	6/6-193		PAFZZN
	10/5-121		PAFZZN
	10/5-125		PAFZZN
	10/5-130		PAFZZN
	10/6-135		PAFZZN
	10/6-141		PAFZZN
	10/7-165		PAFZZN
	12/3-58		PAFZZN
	12/3-82		PAFZZN
	12/3-86		PAFZZN
	12/4-109		PAFZZN
	12/4-112		PAFZZN
	12/4-115		PAFZZN
	12/6-149		PAFZZN
	12/6-158		PAFZZN
	12/6-167		PAFZZN
	13/2-4		PAFZZN
	13/2-7		PAFZZN
	13/3-41		PAFZZN
	13/3-45		PAFZZN
	13/3-48		PAFZZN
	14/2-7		PAFZZN
	14/2-10		PAFZZN
	14/2-24		PAFZZN
	14/3-35		PAFZZN
	14/3-41		PAFZZN
	14/3-48	102	PAFZZN
152-0077-040	6/6-125		PAFZZN
	6/6-199		PAFZZN
	9/1-66		PAFZZN
	10/5-106		PAFZZN
152-0077-040	10/5-109		PAFZZN
	10/5-112		PAFZZN
	10/5-117		PAFZZN
	10/6-147		PAFZZN
	10/6-153		PAFZZN
	10/7-159		PAFZZN
	10/7-169		PAFZZN
	12/2-54		PAFZZN
	12/3-63		PAFZZN
	12/3-68		PAFZZN
	12/3-72		PAFZZN
	12/3-76		PAFZZN
	12/3-79		PAFZZN
	12/4-84		PAFZZN
	12/3-90		PAFZZN
	12/3-93		PAFZZN
	12/3-96		PAFZZN
	12/3-99		PAFZZN
	12/4-102		PAFZZN
	12/4-119		PAFZZN
	12/4-123		PAFZZN
	12/5-132		PAFZZN
	12/5-140		PAFZZN
	13/2-10		PAFZZN
	13/2-15		PAFZZN
	13/2-21		PAFZZN
	13/2-25		PAFZZN
	13-40		PAFZZN
	13/3-44		PAFZZN
	13-50		PAFZZN
	14/2-4		PAFZZN
	14/2-13		PAFZZN
	14/2-18		PAFZZN
	14/3-55	109	PAFZZN
152-0077-060	13/2-30		PAFZZN
	13/2-35		PAFZZN
	14/2-23		PAFZZN
	14/2-30	9	PAFZZN
16-10-201-11	3-3	2	PAFZZN
175-0375	12/5-131	1	
	12/5-139	AR	
2-17241	1/4-35		
	1/1-126	4	
20390PH	6/3-35	1	PAFLDT
205839-3	12/6-175	1	PAFZZN
206138-1	12/4-106	1	PAFZZN
207485-1	12/4-107	1	PAFZZN
21CAD	4-3	3	PAFZZN
2110-0190CADPL	F8-44	4	PAFZZN
22NCFMA1-1032	12/1-27	12	PAFZZN
2200/AUTUMN BRON ZE	1/2-30	1	XBDDD-
2385-2-18	3-1	1	PAFZZN
259-2753-020	11-7	1	PAFZZN
261030	11-5	1	PAFZZN
262-102	10/6-137		PAFZZN
	10/6-143	4	PAFZZN
262-103	10/6-136		PAFZZN

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262-103	10/6-142	3	PAFZZN
268	10/2-28	3	PAFZZN
280-1368-010	12/2-19	1	PAFZZN
280-1368-030	12/1-31	5	PAFZZN
280-1368-060	6/4-73		PAFZZN
	8/2-1		PAFZZN
	8/2-3		PAFZZN
	11-1	4	PAFZZN
280-1368-360	5-1	2	XB----
30FHXX	11-2	1	PAFZZN
310-0002-000	F9-24	10	PAFZZN
310-0019-000	F12-20		PAFZZN
	F12-22	2	PAFZZN
310-0050-000	F4-3	3	PAFZZN
310-0277-000	F9-69	4	PAFZZN
33FHXX	11-3	1	PAFZZN
330-1748-190	F9-69	4	PAFZZN
3302	6/2-89	1	PAFZZN
334-1115-000	5-14		PAFZZN
	7-9	2	PAFZZN
340104	18/2-10	1	PAFZZN
346-0255-001	F10-56A	2	PAFZZN
35-25-0013-00	5-16	1	PAFZZN
352-1003	16-20	AR	PAFZZN
4-15189-7120	1/6-162	4	PAOZZN
4-15189-7140	1/6-164	4	PAOZZN
4-15346-7620	1/6-163	10	PAOZZN
4-25087-4924	13/1-55		PAFZZN
	14/1-61	2	PAFZZN
4012HT	9/3-61A	1	PAFZZN
4041	9/3-38	2	PAFZZN
439-0694-010	1/7-168	2	PAFZZN
	2-4	AR	PAFZZN
	14/2-6	AR	PAFZZN
476042	12/1-17	3	PAFZZN
5JX94	10/3-53	3	PAFZZN
5L1FF	9/3-27	8	PAFZZN
5110C	10/3-57	3	PAFZZN
515-CDC	6/5-154	AR	XBDDD-
521-CDC	6/5-121	AR	
522-4101-004	11-4	1	PAFZZN
5252	6/1-50	1	
541-5995-002	2-10	4	PAFZZN
541-6037-002	9/1-56	2	PAFZZN
547-1137-005	4-1	2	PAFZZN
547-1243-002	4-6	1	PAOFF-
547-1244-002	4-4	1	PAFZZN
547-5305-002	8/2-25		PAFZZN
	16-11		PAFZZN
	16-18	5	PAFZZN
5701-24	12/1-44	1	PAFZZN
5705-14	10/4-79	1	XBF---
59-216	6-129	1	PAFZZN
60A19B	6/3-31	1	PAO---
6014	12/6-176	1	
622-3386-001	1/2-118	2	PAFDDT
622-3418-001	12/1-51	2	AFFZZ-
622-3473-005	1/2-107	1	PAFDDT

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
622-3475-006	1/2-115	1	PAODDT
622-3490-002	1/2-112	1	PAODDT
622-3493-001	12/1-50	2	AFFFZ-
622-3512-002	1/2-111	1	PAODDT
622-3515-001	5-37	1	PAFDDT
622-6016-001	1/2-117	1	ADDDD-
623-9008-001	12/2-8		XB----
	16-1	2	XB----
632-5201-001	12/2-10		MDDZZ-
	16-3	2	XB----
634-8565-001	12/6-170	1	
634-8565-002	12/6-152		
	12/6-161	2	
634-8576-001	12/6-164	1	
634-8576-002	12/6-155	1	
63777-000	1/6-159	1	PAFZZN
646-8699-001	6/4-182	1	
649-7147-001	1-	1	XB----
651-4140-001	9/1-50	1	PAFLDT
656	1/6-155	1	PAFZZN
656-1033-001	6/3-32		PAFZZN
	6/4-81	6	PAFZZN
656-3401-001	1/7-169	1	XB----
656-3401-002	1/7-170	1	XB----
656-3401-003	1/7-171	1	XB----
656-3401-004	1/7-174	1	XB----
656-3401-005	1/7-175	1	XB----
656-3401-006	1/7-176	1	XB----
656-3401-007	1/4-67	1	XB----
656-3401-008	1/4-69	1	XB----
656-3401-009	1/4-71	1	XB----
656-3401-010	1/5-79	1	XB----
656-3401-011	1/5-81	1	XB----
656-3401-012	1/5-83	1	XB----
656-3402-001	6/4-75		XB----
	6/5-119	3	XB----
656-3403-001	1/4-38	1	
656-3405-001	F1-38		
	F1-42	2	
656-3405-002	1/4-40		PAOZZN
	1/4-44	2	PAOZZN
656-3407-001	F1-31	4	XB----
656-3408-001	F1-124	2	PAFZZN
656-3408-002	1/1-127	1	
656-3409-001	F1-33	1	
656-3409-002	1/4-36	1	
656-3410-001	F1-33	1	XBDZZ-
656-3415-001	1/1-131	2	XB----
656-3419-001	7-8	1	XBDDD-
656-3420-001	F1-156	1	AFF---
656-3420-002	1/6-158	1	PAFZZN
656-6881-001	12/1-189	1	
656-6882-001	6/1-203	1	ADDDD-
656-6884-001	6/1-29	1	ADDDZ-
	10-	REF	ADDDZ-
656-6887-001	6/1-3	1	ADDDZ-
	9-	REF	ADDDZ-
656-6888-001	1/2-31	1	ADDDD-

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
656-6888-001	5-	REF	ADDDD-
656-6889-001	6/2-2	1	ADDDZ-
	8-	REF	ADDDZ-
656-6890-001	6/1-105	1	
	12-	REF	ADDDZ-
656-6891-001	6/1-69	1	ADDDD-
	18-	REF	ADDDD-
656-6892-001	18/2-22	1	ADDDD-
656-6893-001	1/2-95	2	
656-6894-001	F6-65		MDD---
656-6895-001	F17-5	1	ADDDD-
656-6899-001	12/1-16	1	ADDDZ-
	16-	REF	ADDDZ-
656-6900-001	1/2-179	1	ADDDD-
	6-	REF	ADDDD-
656-6901-001	F7-17	1	XB----
656-6903-001	F12-7	1	ADDDZ-
656-6906-001	8/2-23	1	XB----
656-6907-001	8/2-4	1	XB----
656-6908-001	8/1-40	1	XB----
656-6909-001	F8-7	1	XB----
656-6909-002	F8-9	1	XB----
656-6909-003	F8-11	1	XB----
656-6909-004	F8-13	1	XB----
656-6910-001	17/2-7	1	XBDDD-
656-6910-002	17/2-6	1	XBDDD-
656-6911-001	17/2-17	2	MDD---
656-6912-001	17/2-22	1	MDD---
656-6912-002	17/2-21	1	MDD---
656-6913-001	12/1-52	1	MDDDD-
656-6913-002	12/1-53	1	MDD---
656-6914-001	17/2-12	1	XBDDD-
656-6914-002	17/2-11	1	XBDDD-
656-6915-001	17/2-14	2	XBDDD-
656-6916-001	17/2-15	1	XBDDD-
656-6917-001	17/2-8	1	
656-6918-001	17/2-18	1	XBDDD-
656-6919-001	6/2-47	2	XBDDD-
656-6920-001	17/2-10	2	MDD---
656-6922-001	8/2-2	1	XB----
656-6923-001	F17-22	1	MDD---
656-6923-002	17/2-24	1	
656-6924-001	17/2-9	4	MDD---
656-6925-001	17/2-20	2	XBDDD-
656-6926-001	1/2-120	2	XB----
656-6927-001	17/2-16	2	MDD---
656-6928-001	18/1-5	1	PAFZZN
656-6929-001	18/1-3	1	MDD---
656-6929-002	18/1-4	1	MD----
656-6930-001	18/1-7	2	MDD---
656-6931-001	18/1-8		MD----
	18/2-9	2	MD----
656-6932-001	18/1-2	2	MDD---
656-6935-001	F8-42	1	XB----
656-6935-002	8/1-46	1	
656-6937-001	F8-36	1	XB----
656-6937-002	8/2-38	1	XB----
656-6940-001	F8-17	10	XB----

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
656-6940-002	8/2-19	1	
656-6941-001	19-11	4	XBDZZ-
656-6942-001	19-2		XBDZZ-
	19-6	16	XBDZZ-
656-6943-001	19-8		XBDZZ-
	19-10	8	XBDZZ-
656-6944-001	19-7	1	XBDZZ-
656-6944-002	19-9	1	XBDZZ-
656-6945-001	19-12	1	XBDZZ-
656-6945-002	19-13	1	XBDZZ-
656-6948-001	3-6	1	XB----
656-6948-002	3-5	2	XB----
656-6948-003	3-4	1	XB----
656-6948-004	3-7	1	XB----
656-6949-001	19-	REF	ADDDZ-
656-6950-001	19-3	2	XBDZZ-
656-6951-001	3-2	1	XB----
656-6952-001	F3-7	1	XB----
656-6952-002	3-9	1	XB----
656-6953-001	1/2-96	1	ADDDD-
	3-	REF	ADDDD-
656-6954-001	8/2-9	1	
656-6954-002	8/2-11	1	
656-6954-003	8/2-13	1	
656-6954-004	8/2-15	1	
656-6955-001	F8-15	1	XB----
656-6955-002	8/2-17	1	
656-6957-001	F8-46	1	XB----
656-6957-002	F8-48	1	XB----
656-6957-003	8/1-50	1	
656-6957-004	8/1-48	1	
656-6960-001	12/1-47	1	MDDZZ-
656-6960-002	12/1-48	1	XBDDD-
656-6961-001	1/4-66		XBDDD-
	1/5-78	4	XBDDD-
656-6968-001	8/2-39	2	PAFZZN
656-6969-001	9/3-65	1	MFFZZ-
656-6971-001	12/2-14	1	MDDDZ-
656-6974-001	12/2-9	1	XB----
656-6975-001	F8-51	1	XB----
656-6975-002	8/1-54	1	
656-6976-001	12/1-1	5	
656-6976-002	12/1-4	1	
656-6978-001	12/1-5	1	
656-6979-001	12-	1	PAFZZN
656-6980-001	F8-64	1	XB----
656-6980-002	8/1-66	1	
656-6982-001	8/1-56	1	MDD---
656-6982-002	8/1-57	1	MDD---
656-6982-003	8/1-58	1	MDD---
656-6982-004	8/1-59	1	MDD---
656-6982-005	8/1-60	1	MDD---
656-6982-006	8/1-55	1	MDD---
656-6983-001	15-	1	ADDDZ-
656-6983-002	F15-8	1	ADDZZ-
656-6983-003	15-1	1	MDDZZ-
656-6983-004	15-9	1	MDDZZ-
656-6984-001	15-11	1	MDDZZ-

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
656-6985-001	12/1-15	2	ADDDZ-
	15-	REF	ADDDZ-
656-6987-001	16-8	1	
656-6988-001	16-6	1	
656-6989-001	16-5	1	PAFZZN
656-6990-001	F16-4	1	AFF---
656-6991-001	12/1-45	1	MDDZZ-
656-6991-002	12/1-46	1	XBDDD-
656-6992-001	6/5-156	1	
656-6994-001	12/1-43	2	MDDZZ-
656-6994-002	12/1-42	2	MDDZZ-
656-6994-003	12/1-41	4	MDDZZ-
656-6994-004	12/1-40	4	MDDZZ-
656-7000-001	12/1-49	2	XBFZZ-
656-7001-001	F12-26	3	XBFZZ-
656-7001-002	12/1-29	1	
656-7002-001	10/1-33		XBDZZ-
	12/6-178	3	XBDDD-
656-7003-001	10/4-62		MDDZZ-
	10/4-69		MDDZZ-
	10/1-87	4	MDDZZ-
656-7005-001	9/3-26	2	XBFZZ-
656-7006-001	9/3-41	1	XBFZZ-
656-7006-002	9/3-29	1	XBFZZ-
656-7006-003	9/3-42	1	MDDZZ-
656-7006-004	9/3-30	1	XBFZZ-
656-7007-001	9/3-39	2	PAFZZN
656-7008-001	10/4-64		PAFZZN
	10/4-71		XBF---
	10/1-89	4	XBF---
656-7009-001	9/1-1A	2	
656-7010-001	F9-1	4	PAFZZN
656-7012-001	F9-2	2	MFFZZ-
656-7013-001	9-	2	AFFFZ-
656-7013-002	9/1-9	2	PAFZZN
656-7013-003	9/1-10	1	PAFZZN
656-7014-001	9/1-1B	2	
656-7015-001	9/1-6	1	PAFZZN
656-7015-002	9/1-8	1	PAFZZN
656-7015-003	9/1-7		PAFZZN
	9/1-11	4	PAFZZN
656-7015-004	9/1-13	1	PAFZZN
656-7015-005	9/1-12	1	PAFZZN
656-7016-001	F9-3	1	MFFZZ-
656-7017-001	9/2-75	1	ADDDZ-
656-7018-001	9/1-5	1	PAFZZN
656-7021-001	10/4-67	1	XBF---
656-7022-001	10/4-84	1	XBF---
656-7023-001	6-29A	2	XBDDD-
656-7024-001	6/1-27A	2	XBDDD-
656-7028-001	7-1	1	XB----
656-7029-001	7-2	1	XBDDD-
656-7030-001	6/1-28	1	PAFZZN
656-7031-001	F10-5	1	XBF---
656-7031-002	10/1-7	1	
656-7032-001	F9-14	1	XBFZZ-
656-7033-001	F9-10	1	AFFFZ-
656-7033-002	9/1-18	1	XB----
656-7033-003	9/1-17	2	XB----
656-7033-004	9/1-16	2	XB----
656-7034-000	12/5-138	1	
656-7034-001	12/5-130	1	
656-7034-002	12/5-128		
	12/5-137	2	
656-7036-001	12/5-127	1	
656-7036-005	12/5-136	2	
656-7036-006	12/5-129	1	
656-7037-001	6/1-116	2	PAFZZN
656-7038-001	6/5-137	2	XBDDD-
656-7039-001	9/1-25	2	PAFZZN
656-7040-001	9/1-24	2	XBDDD-
656-7041-001	F9-21	1	MDDDZ-
656-7041-002	9/1-23	1	MDD---
656-7041-003	9/1-22	1	XBDZZ-
656-7042-001	F9-18	1	AFFFZ-
656-7042-002	9/2-20	2	XBFZZ-
656-7042-003	9/2-19	1	PAFZZN
656-7044-001	6/5-142	1	XBDDD-
656-7045-001	10/1-45	1	
656-7048-001	F6-144	1	PAFZZN
656-7048-002	6/5-146	1	PAFZZN
656-7049-001	6/5-140	1	ADDDD-
656-7050-002	10/1-96A	1	XB----
656-7051-001	6/1-208	1	XBF---
656-7052-001	6/1-72	1	XBDDD-
656-7052-002	6/1-71	1	XBDDD-
656-7053-001	6/5-136	1	PAFZZN
656-7054-001	10/2-107	1	AFF---
656-7055-001	10/5-115	1	AFF---
656-7056-001	10/5-124	1	AFF---
656-7057-001	10/5-120	1	AFF---
656-7058-001	F12-53	1	AFF---
656-7059-001	12/2-57	1	AFF---
656-7060-001	6/5-143	1	PAFZZN
656-7061-001	6/5-144	1	PAFZZN
656-7062-001	F9-30	1	PAFZZN
656-7062-002	9/3-37	1	XBF---
656-7062-003	9/3-36	1	XBFZZ-
656-7062-004	9/3-32	1	XBFZZ-
656-7062-005	9/3-33	1	XBFZZ-
656-7062-006	9/3-34	1	XBFZZ-
656-7062-007	9/3-35	1	XBFZZ-
656-7062-008	9/3-31	1	PAFZZN
656-7063-001	F11-14	1	XBF---
656-7063-002	11-17	1	XBF---
656-7067-001	F11-13	1	XBF---
656-7068-001	6/5-120	1	AFF---
656-7069-001	10/5-129	1	AFF---
656-7070-001	10/2-110	1	AFF---
656-7071-001	10/2-104	1	AFF---
656-7072-001	F9-38	3	PAFZZN
656-7074-001	F10-74	1	XBF---
656-7074-002	10/1-92	1	XBF---
656-7074-003	10/4-78	1	
656-7074-004	10/1-96	1	
656-7074-005	10/4-77		

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
656-7074-005	10/1-95	2	
656-7075-001	F6-122	1	PAFZZN
656-7075-002	6/5-124	1	
656-7079-001	9/1-45	2	PAFZZN
656-7079-002	9/1-46	2	PAFZZN
655-7080-001	F9-44	1	AFFFZ-
656-7080-002	9/1-47	1	MDDZZ-
656-7081-001	F9-56	1	AFFFZ-
656-7081-002	9/1-58	1	MDDZZ-
656-7081-003	9/1-57	1	XB----
656-7083-001	10/2-16	2	XBF---
656-7084-001	10/2-19	1	XBF---
656-7084-002	10/2-18	1	XBF---
656-7085-001	12/3-67	1	AFF---
656-7086-001	F12-71	1	AFF---
656-7087-001	12/3-62	1	AFF---
656-7088-001	12/3-75	1	AFF---
656-7089-001	12/3-78	1	AFF---
656-7090-001	12/3-81	1	AFF---
656-7091-001	F12-83	1	AFF---
656-7092-001	F12-126	1	AFF---
656-7093-001	12/5-135	1	AFF---
656-7094-001	F1-164	1	PAOFF-
656-7101-001	F13-19	1	AFF---
656-7102-001	12/5-143	1	AFF---
656-7103-001	F13-24	1	AFF---
656-7104-001	F14-29	1	AFF---
656-7105-001	F14-22	1	AFF---
656-7106-001	F14-17	1	AFF---
656-7107-001	F14-12	1	AFF---
656-7108-001	F13-14	1	AFF---
656-7109-001	F13-9	1	AFF---
656-7110-001	F13-6	1	AFF---
656-7111-001	F13-3	1	AFF---
656-7112-001	F14-9	1	AFF---
656-7113-001	F14-6	1	AFF---
656-7114-001	10/7-158	1	AFF---
656-7115-001	F14-3	1	AFF---
656-7116-001	10/7-164	1	AFF---
656-7117-001	10/5-134	1	AFF---
656-7118-001	10/6-140	1	AFF---
656-7119-001	10/6-146	1	AFF---
656-7120-001	10/6-152	1	AFF---
656-7121-001	10/7-168	1	AFF---
656-7122-001	5-2	1	
656-7126-001	16-16	1	MDDZZ-
656-7128-001	16-15	1	XB----
656-7129-001	F16-20	1	ADDDZ-
656-7129-002	16-23	1	XB----
656-7130-001	10/2-14	2	XBF---
656-7134-001	F9-40	1	AFFFZ-
656-7134-002	F9-41	1	AFFFZ-
656-7136-002	18/1-19	1	MDD---
656-7136-003	F6-10	1	XBDDD-
656-7136-004	6/3-12	6	
656-7136-005	6/3-13	5	
656-7136-009	6/3-15	1	
656-7136-010	6/3-14	1	
656-7137-002	18/1-20	1	MDD---
656-7137-003	F6-5	1	XBDDD-
656-7137-004	6/3-7	6	XBDDD-
656-7137-005	6/3-8	5	
656-7137-009	6/3-10	1	
656-7137-011	6/3-9	1	
656-7138-001	F6-15	2	
656-7138-002	6/3-18	1	
656-7148-001	6/5-166	2	XBDDD-
656-7149-001	6/1-68A	1	XBDDD-
656-7151-001	18/2-14	2	MDD---
656-7151-002	18/2-16	1	MDD---
656-7151-003	18/2-17	1	MDD---
656-7151-004	18/2-18	2	MDD---
656-7151-005	18/1-12		MDD---
	18/2-15	2	MDD---
656-7153-001	18/1-13	1	MDD---
656-7158-001	6-210	6	
656-7158-002	6-209	3	
656-7161-001	F9-59	2	PAFZZN
656-7162-001	F9-60	2	PAFZZN
656-7163-001	9/1-55	1	MDD---
656-7164-001	F10-9	1	XBF---
656-7164-002	10/2-12	1	
656-7166-001	6/1-70	1	PAFZZN
656-7167-001	12/1-36	1	XBDZZ-
656-7167-002	12/1-34	1	XBDZZ-
656-7167-003	12/1-37	1	XBDZZ-
656-7167-004	12/1-35	1	XBDZZ-
656-7171-001	1/1-145	1	XBDDD-
656-7172-001	1/1-144	1	XBDDD-
656-7173-001	F6-51		
	F6-54		
	F6-97	29	
656-7173-002	6/1-52		
	6/2-55		
	6/3-98	3	
656-7179-001	6/5-158	2	PAFZZN
656-7180-001	10/4-68	1	PAFZZN
656-7181-001	10/4-85	1	PAFZZN
656-7182-001	6/5-160	2	XBDDD-
656-7183-001	18-	1	ADDDD-
656-7184-001	6/5-159	2	
656-7185-001	12/4-114	1	AFF---
656-7187-001	12/4-122	1	AFF---
656-7188-001	12/4-118	1	AFF---
656-7190-001	F6-198	1	AFF---
656-7193-001	F1-63	1	PAOZZN
656-7194-001	F1-75	1	PAOZZN
656-7195-001	6/5-150	1	XBDDD-
656-7195-002	6/5-149	1	XBDDD-
656-7196-001	6/5-148	2	PAFZZN
656-7198-001	10/7-163	1	XB----
656-7199-001	F12-135	1	PAFZZN
656-7201-001	F6-61	1	XBDDD-
656-7201-002	F6-63	1	XBDDD-
656-7201-003	6/1-63	1	
656-7201-004	6/1-65	1	

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
656-7202-001	6/5-153	1	XBDDD-
656-7203-001	F10-14	1	MDDZZ-
656-7204-001	6/1-48	1	XBDDD-
656-7204-002	6/2-49	1	XB----
656-7205-001	F6-50	1	XBDDD-
656-7205-002	F6-53	1	XBDDD-
656-7205-003	6/1-53	1	
656-7205-004	6/2-56	1	
656-7207-001	6/5-157	6	XBDDD-
656-7208-001	F13/2-29	1	AFF---
656-7209-001	F13-34	1	AFF---
656-7210-001	F9-65	1	AFF---
656-7211-001	F14-34	1	AFF---
656-7212-001	F13-39	1	AFF---
656-7213-001	F13-43	1	AFF---
656-7214-001	F13-47	1	AFF---
656-7215-001	F13-49		AFF---
	F13-51	2	AFF---
656-7216-001	F14-54	1	AFF---
656-7217-001	F14-40	1	AFF---
656-7218-001	F14-47	1	AFF---
656-7219-001	F6-192	1	AFF---
656-7220-001	12/4-126	1	PAFZZN
656-7222-001	6/4-180	1	XBDDD-
656-7225-001	10/4-61	1	PAFZZN
656-7225-010	10/4-74		PAFZZN
	10/1-86	4	PAFZZN
656-7226-001	12/4-108	1	AFF---
656-7227-001	12/4-111	1	AFF---
656-7228-001	10/6-151	1	XB----
656-7229-001	10/7-172	1	XB----
656-7230-001	F6-148	1	ADDDD-
656-7231-001	10/6-157	1	XB----
656-7232-001	6/4-80	1	XBDDD-
656-7233-001	6/4-74	1	XBDDD-
656-7234-001	6/4-79	1	XBDDD-
656-7236-001	F9-49		PAFZZN
	10/2-13	6	PAFZZN
656-7237-001	16-2	1	XBFZZ-
656-7238-001	F6-18	1	XBDDD-
656-7238-002	6/1-21	1	
656-7239-001	F6-22	1	XBDDD-
656-7239-002	6/1-26	1	
656-7240-001	6/1-27	1	XBDDD-
656-7241-001	6/5-151	2	XBDDD-
656-7241-002	6/5-152	2	XBDDD-
656-7242-001	8/2-5	1	PAFZZN
656-7243-001	8/2-24	1	PAFZZN
656-7244-001	17/2-13	2	XBDDD-
656-7245-001	13-52		XBFZZ-
	14/1-60	2	XBFZZ-
656-7247-001	10/1-3	1	XBF---
	11-	REF	XBF---
656-7248-001	F6-40		XBDDD-
	F6-76	6	XBDDD-
656-7248-002	6/3-42		
	6/4-78	2	
656-7250-001	6/2-106	1	XBDDD-
656-7251-001	6/2-107	1	XBDDD-
656-7252-001	6/1-1	1	ADDDD-
	7-	REF	ADDDD-
656-7253-001	8/1-51	1	XB----
656-7254-001	F12-185	1	XBDZZ-
656-7255-001	13/1-2	1	PAFZZN
656-7255-002	13/1-3	1	PAFZZN
656-7255-003	14/1-2	1	PAFZZN
656-7255-004	14/1-3	1	PAFZZN
656-7256-001	F6-36	1	XBDDD-
656-7256-002	6/3-44	1	
656-7256-003	6/3-45	1	
656-7257-001	6/3-36	2	XBDDD-
656-7258-001	6/3-30	1	XBDDD-
656-7260-001	10/5-116	1	XBDZZ-
656-7260-002	10/5-111	1	XBDZZ-
656-7261-001	10/5-108	1	XBDZZ-
656-7261-002	10/5-105	1	XBF---
656-7262-001	6/3-34	2	ADD---
656-7263-001	6/4-170	1	PAFZZN
656-7264-001	6/4-167	1	PAFZZN
656-7264-002	6/4-168	1	PAFZZN
656-7265-001	6/4-174	1	
656-7265-002	6/4-175	1	
656-7266-001	F6-173	1	
656-7267-001	F6-168	2	ADDDD-
656-7270-001	12/6-166	1	AFF---
656-7272-001	6/5-155	10	MDD---
656-7273-001	9/1-49	1	PAFZZN
656-7275-001	F12-85	1	AFF---
656-7276-001	12/3-101	1	AFF---
656-7278-001	12/5-148	1	AFF---
656-7279-001	12/6-157	1	AFF---
656-8682-001	12/3-89	1	AFF---
656-8683-001	12/3-92	1	AFF---
656-8684-001	12/3-95	1	AFF---
656-8685-001	12/3-98	1	AFF---
656-8687-001	F12-18	3	ADDDD-
656-8688-001	F5-16	1	XBDDD-
656-8688-002	5-18	1	XBDDD-
656-8690-001	F5-11	1	XBDDD-
656-8690-002	5-13	1	
656-8692-001	6/4-184	4	PAFZZN
656-8693-001	6/4-171	3	PAFZZN
656-8694-001	6/4-191	2	XBDDD-
656-8695-001	6/4-189	2	XBDDD-
656-8696-001	6/4-190	2	XBDDD-
656-8697-001	6/4-188	2	PAFZZN
656-8698-001	6/4-181	1	PAFZZN
656-8700-001	12/2-23	1	ADDDD-
656-8700-002	12/2-26	1	MDDZZ-
656-8701-001	6/1-5	2	XBDDD-
656-8702-001	F5-2	1	
656-8702-002	5-5	1	
656-8703-001	2-9	1	XBDDD-
656-8704-001	1/2-86	1	PAFZZN
	2-	REF	ADDDD-
656-8705-001	F5-20	1	XB----

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
656-8705-002	5-22	1	XB----
656-8708-001	12/1-6	1	PAFDDT
	13-	REF	PAFDDT
656-8709-001	12/1-7	1	PAFDDT
	14-	REF	PAFDDT
656-8712-001	6/4-172	2	PAFZZN
656-8712-002	6/4-173	1	PAFZZN
656-8712-003	6/4-183	1	PAFZZN
656-8713-001	6/5-162	1	XBDDD-
656-8714-001	6/5-164	1	XBDDD-
656-8715-001	6/5-161	1	XBDDD-
656-8716-001	6/5-163	1	XBDDD-
656-8718-001	5-29	2	XBDDD-
656-8719-001	6/3-95	1	XBDDD-
656-8720-001	6/5-141	1	PAFZZN
656-8721-001	F6-95	1	XB----
656-8721-002	6/3-99	1	XBDDD-
656-8722-001	5-38	1	XBDDD-
656-8722-002	F5-38	1	XBDDD-
656-8723-001	F6-111	1	XBDDD-
656-8723-002	6/2-113	1	
656-8723-004	6/2-112	1	
656-8724-001	F6-99	1	XBDDD-
656-8724-002	6/2-103	1	
656-8725-001	1/1-134	1	MDDDD-
656-8726-001	1/1-135	1	MDDDD-
656-8727-001	6/2-118	1	PAO---
656-8729-001	5-25	1	MDDZZ-
656-8730-001	5-24	1	MDDZZ-
656-8732-001	1/1-150	1	XBDDD-
656-8733-001	10/1-86B	1	XB----
656-8734-001	F6-124	1	AFF---
656-8741-001	F1-53	1	XB----
656-8741-002	1/1-58	1	
656-8741-003	1/1-57	1	
656-8741-004	1/1-56	1	
656-8741-005	1/1-55	1	
656-8741-006	1/1-54	1	
656-8742-001	F1-49	1	
656-8742-002	1/1-51	1	XB----
656-8742-003	1/1-50	1	
656-8743-001	F1-51	1	XB----
656-8743-002	1/1-53	1	
656-8743-003	1/1-52	1	
656-8744-001	F1-58	1	XB----
656-8744-002	1/1-62	1	
656-8744-003	1/1-61	1	
656-8744-004	1/1-60	1	
656-8744-005	1/1-59	1	
656-8745-001	6/5-165	2	ADDDD-
656-8746-001	1/1-133	1	XBDDD-
656-8747-001	1/1-128	1	XBDDD-
656-8748-001	1/1-129	1	
656-8749-001	1/1-1	1	ADD---
	4-	REF	ADD---
656-8750-001	10/3-56B	1	XB----
656-8751-001	6-129	1	AFF---
656-8752-001	1/2-124	4	PAFZZN
656-8753-001	17/1-4	2	XBDZZ-
656-8754-001	17/1-5	1	XBDZZ-
656-8755-001	17-1	1	XBDZZ-
656-8755-002	17/1-3	1	
656-8757-001	17/1-2	2	XBDZZ-
656-8758-001	10-66	4	XBF---
656-9041-001	1/1-11	1	XB----
656-9042-001	1/3-16	1	XB----
656-9043-001	F1-11	1	XB----
656-9043-002	1/3-15	1	XB----
656-9043-003	1/3-14	1	XB----
656-9043-004	1/3-13	1	XB----
656-9043-005	1/3-12	1	XB----
656-9044-001	1/1-2	1	ADD---
	4-	REF	ADD---
656-9045-001	10/2-27	3	
656-9047-001	13-1		PAFZZN
	14-1	2	PAFZZN
656-9048-001	1/1-138	2	PAFZZN
656-9049-001	F1-135	2	XB----
656-9049-002	1/1-137	1	
656-9050-001	6/1-60	1	ADDDD-
	17-	REF	ADDDZ
656-9051-001	1/3-25	2	
656-9052-001	12/1-187	2	XBDZZ
656-9053-001	12/1-39	1	XBDZZ-
656-9054-001	10/3-46	1	XB----
656-9055-001	1/1-148	1	XB----
656-9056-001	1/1-147	1	XB----
656-9058-003	1/4-41	1	
656-9058-004	1/4-45	1	
656-9059-001	6/2-110	1	PAFZZN
656-9061-001	6/2-111	1	PAFZZN
656-9062-001	F1-26	1	
656-9062-002	1/3-28	1	
656-9062-003	1/3-29	1	
656-9063-001	F1-21	2	
656-9063-002	1/3-23	1	
656-9064-001	1/3-21	2	PAFZZN
656-9066-001	F1-86		PAFZZN
	F1-97	2	XB----
656-9066-002	1/5-88		XB----
	1/5-99	2	XB----
656-9067-001	F1-88		XB----
	F1-99	2	XB----
656-9067-002	F1-90		XB----
	F1-101	2	XB----
656-9067-003	1/5-90		
	1/5-101	2	
656-9067-004	1/5-92		
	1/5-103	2	
656-9068-001	F1-138	1	PAOZZN
656-9068-002	1/2-141	3	
656-9069-001	F1-6	1	PAOZZN
656-9070-001	F1-2	1	PAOZZN
656-9070-002	1/3-4	3	PAOZZN
656-9071-001	F1-4	1	PAOZZN
656-9071-002	1/3-6		PAOZZN

PART NUMBER	VOLUME FIGURE & INDEX NO.	QTY PER END ITEM	SMR
656-9071-002	1/1-9	4	PAOZZN
656-9072-001	F1-20	1	XB----
656-9073-001	1/2-105		XB----
	1/2-108		XB----
	1/2-119	3	XB----
656-9074-001	6/5-138	1	
656-9075-001	6/5-139	1	
656-9076-001	1/1-151	1	PAFZZN
656-9077-001	F5-13	2	
656-9079-001	F1-168	1	PAOFFP
656-9080-001	F1-173	1	PAOFF-
66101-4	12/4-104	2	PAFZZN
662R1-1X1-4CDPL	1/3-17		PAFZZN
	1-47		
	5-35		PAFZZN
	5-36		PAFZZN
	10/1-86A	13	PAFZZN
66258-3	12/4-105	4	PAFZZN
665-8691-001	F5-31	1	PAFZZN
665-8691-002	5-34	1	PAFZZN
677-3010	9/1-60		PAFZZN
	9/1-61		PAFZZN
	10/2-15	5	PAFZZN
68NA7-68-02	F9-41		PAFZZN
	F9-42	2	PAFZZN
7-8648-5	7-3	2	PAFZZN
7100-31-SS2	F6-148	2	PAFZZN
730TW10C2-9-0	10-102	AR	XBDZZ-
7485-10P22	6/6-198	AR	XAFZZN
	13/2-14	AR	PAFZZN
	13/2-19	AR	PAFZZN
	13/2-29	AR	PAFZZN
	13/3-54	AR	PAFZZN
	14/2-17	AR	PAFZZN
	14/2-22	AR	PAFZZN
7485-18P22	13/2-34	AR	PAFZZN
	13/2-39	AR	PAFZZN
7485-5P22	13/2-24	AR	PAFZZN
	13/3-51	AR	PAFZZN
	14/2-34	AR	PAFZZN
75361	4-8	1	PAFZZN
75371	4-10	1	PAFZZN
75381	4-11	4	PAFZZN
75391	4-7	1	PAFZZN
75431	4-9	1	PAFZZN
785-5622-097	1/2-116	3	MDDZZ-
785-5622-099	1/2-114	1	MDDZZ-
793-5986-002	4-2	3	PAOZZN
800-030-1-4	7-12	1	PAFZZN
800-030-6	F8-26	2	PAFZZN
83-23	8/2-30	2	PAFZZN
8630-14	13/2-27		PAFZZN
	14/2-32	2	PAFZZN
90281192-001	15-12	1	XBDZZ-
90416001-006	1/2-93	8	PAFDDT
90416002-006	1/2-94	8	PAFDDT
92LN1030B	16-12	3	PAFZZN
9425	1/1-130	2	PAFZZN
9650	9/3-63	1	
9663	9/3-62	1	PAFZZN

SECTION IV
REFERENCE DESIGNATION INDEX

REFERENCE DESIGNATION	VOLUME FIGURE & INDEX NO.	REFERENCE DESIGNATION	VOLUME FIGURE & INDEX NO.	REFERENCE DESIGNATION	VOLUME FIGURE & INDEX NO.
AR	12/3-71	W210P1	10-161	1A1A1A3W219P2	14/2-28
CB1	7-6	W210P2	10-160	1A1A1A3W219P3	14/2-28
CB2, CB3	11-8	W238	F6-192	1A1A1A3W219P4	14/2-28
CB4	11-13	W238P1	6/6-196	1A1A1A3W219P5	14/2-28
CB5-CB11	11-12	W238P2	6/6-197	1A1A1A3W219P6	14/2-28
FL100-120	8/2-21	W300	F1-63	1A1A1A3W219P7	14/2-28
FL122	8/2-22	W301	F1-75	1A1A1A3W219P8	14/2-28
FL19	8/2-21	W302	F1-168	1A1A1A3W219P9	14/2-28
FL20-22	8/2-21	W303	F1-173	1A1A1A3W220	F14-29
FL23-29	8/2-20	W305	F6-124	1A1A1A3W220P1	14/2-33
FL30-39	8/2-20	W305P1	6/6-127	1A1A1A3W227	F14-34
FL40-42	8/2-20	XF7-XF9	11-10	1A1A1A3W231	F14-40
FL43-48	8/2-21	1	1-	1A1A1A3W231P1	14/3-46
FL49	8/2-20	1A1	6/1-105	1A1A1A3W232	F14-47
FL50-59	8/2-20	1A1	12-	1A1A1A3W232P1	14/3-53
FL60-66	8/2-20	1A1A1ACR1-CR16	2-7	1A1A1A3W233	F14-54
FL67-69	8/2-21	1A1A1AC1	12/2-21	1A1A1A3W233P1	14/3-57
FL70-79	8/2-21	1A1A1A1	2-	1A1A1A5	12/1-15
FL80-89	8/2-21	1A1A1A1E49	2-5	1A1A1A5, 1A1A1A6	15-
FL90	8/2-21	1A1A1A1J1	2-3	1A1A1A5A1J1	15-8
FL91-94	8/2-20	1A1A1A1J2	2-3	1A1A1A5A1J2	15-6
FL95-99	8/2-21	1A1A1A1R1-R8	2-6	1A1A1A5A1J3	15-3
F7-F9	11-9	1A1A1A2	12/1-6	1A1A1A6	12/1-15
J1	7-7	1A1A1A2	13-	1A1A1A6A1J1	15-8
J2, J3	7-3	1A1A1A2W213	F13-3	1A1A1A6A1J2	15-6
M1	11-5	1A1A1A2W213P1	13/2-5	1A1A1A6A1J3	15-3
M2	11-4	1A1A1A2W214	F13-6	1A1A1A7	12/1-16
M3	11-3	1A1A1A2W214P1	13/2-8	1A1A1A7	16-
M4	11-2	1A1A1A2W215	F13-9	1A1A1A7J1	16-17
P1	1/4-65	1A1A1A2W216	F13-14	1A1A1A7J11	16-12
P1	1/6-157	1A1A1A2W216P1	13/2-18	1A1A1A7J2	16-19
P1	1/7-166	1A1A1A2W221	F13-24	1A1A1A7J3	16-10
P1, P2	1/5-77	1A1A1A2W221P1	13/2-28	1A1A1A7J7	16-12
P2	1/4-74	1A1A1A2W223	F13-19	1A1A1A7J9	16-12
P2	1/7-167	1A1A1A2W225	F13/2-29	1A1A1A7M1	16-14
S1	1/6-159	1A1A1A2W230	F13-51	1A1A2A4	F6-65
S2	11-11	1A1A1A3	12/1-7	1A1A4	6/1-69
S3	11-7	1A1A1A3	14-	1A1A4	18-
W004P1	10-118	1A1A1A3W209	F14-3	1A1W001	F12-53
W005P1	10-127	1A1A1A3W209J1	14/2-5	1A1W001J1	12/2-55
W006P1	10-132	1A1A1A3W211P1	14/2-8	1A1W001P1	12/2-56
W008P1	10-113	1A1A1A3W212	F14-9	1A1W002	12-57
W023	6-129	1A1A1A3W212P1	14/2-11	1A1W002P1	12/3-61
W023P1	6/6-134	1A1A1A3W217	F14-12	1A1W010	12-62
W106	F6-198	1A1A1A3W217P1	14/2-16	1A1W011	12-67
W106P1	6/6-200	1A1A1A3W218P1	F14-17	1A1W011P1	12-70
W106P2	6/6-201	1A1A1A3W218P1	14/2-21	1A1W012	F12-71
W202	F1-164	1A1A1A3W219	F14-22	1A1W012P1	12/3-74
W203J1	10-170	1A1A1A3W219P1	14/2-28	1A1W013	12-75
W204P1	10-155	1A1A1A3W219P10	14/2-28	1A1W014	12-78
W204P2	10-154	1A1A1A3W219P11	14/2-28	1A1W015	12-81
W205P1	10-149	1A1A1A3W219P12	14/2-28	1A1W016	F12-83
W205P2	10-148	1A1A1A3W219P13	14/2-28	1A1W017	F12-85
W206P1	10-144	1A1A1A3W219P14	14/2-28	1A1W017P1	12/3-88
W207P1	10-138	1A1A1A3W219P15	14/2-28	1A1W018	12-89
W208J1	10-166	1A1A1A3W219P16	14/2-28	1A1W019	12-92

REFERENCE DESIGNATION	VOLUME FIGURE & INDEX NO.
1A1W020	12-95
1A1W021	12-98
1A1W022	12-101
1A1W022P1	12/4-107
1A1W100	12-108
1A1W100P1	12/4-110
1A1W100P2	12/4-110
1A1W101	12-111
1A1W101P1	12/4-113
1A1W101P2	12/4-113
1A1W102	12-114
1A1W102P1	12/4-116
1A1W102P2	12/4-117
1A1W103	12-118
1A1W103P1	12/4-120
1A1W103P2	12/4-121
1A1W107	12-122
1A1W107P1	12/4-124
1A1W107P2	12/4-125
1A1W200	F12-126
1A1W200J1	12/5-134
1A1W200P1	12/5-133
1A1W201	12-135
1A1W201P1	12/5-141
1A1W201P2	12/5-142
1A1W222	12-143
1A1W222P1	12/5-147
1A1W222P2	12/5-147
1A1W234	12-148
1A1W234P1	12/6-153
1A1W234P2	12/6-156
1A1W235	12-157
1A1W235P1	12/6-162
1A1W235P2	12/6-163
1A1W236	12-166
1A1W236P1	12/6-171
1A1W236P2	12/6-174
1A2	6/1-29
1A2	10-
1A2CB1	10/1-39
1A2E2	10/3-56A
1A2FL1-1A2FL4	10/3-54
1A2FL5-1A2FL7	10/3-53
1A2F1-1A2F3	10/2-30
1A2F4-1A2F6	10/2-31
1A2K1-1A2K3	10/2-28
1A2PS1, 1A2PS2	10/2-17
1A2S1	10/2-40
1A2TB1	10/2-9
1A2TB2	10/2-25
1A2T1-1A2T3	10/3-57
1A2XK1-1A2XK3	10/2-29
1A3	6/2-2
1A3	8-
1A3FL1-1A3FL18	8/2-20
1A3FL121,	8/2-22
1A3J1	8/2-35
1A3J11	8/1-63
1A3J2-1A3J5	8/2-34
1A3J6	8/2-32
1A3J7, 1A3J8	8/1-27
1A3J9, 1A3J10	8/2-31
1A5	6/1-3
1A5	9-
1A5B1-1A5B9	9/2-74
1A5FL 1A5FL	9/1-48
1A5FL, 1A5FL	9/1-59
1A5J1	9/1-52
1A5PS1	9/1-50
1A5S1	9/3-43
1A5W304	F9-65
1A5W304P1,	9/1-67
1A5W304P2	9/1-67

CHAPTER 7

CIRCUIT DIAGRAMS

7-1. SCOPE. This chapter contains system wiring diagrams and wire lists for the AN/TSC-60(V)7. Table 7-1 is the wire list for cabling in the system. Table 7-2 is the wire list for the signal entry panel. Table 7-3 is the wire list for the power/secure rack.

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List

From	To	Function	Cable no.
A1			
J1-A	A2A3 J2M	TTY Power	W001
J1-B	A2A3 J2K	TTY Neutral	
J1-E	A2A3 J2F	TTY Ground	
A1			
P1-A	A1TB3-7	TTY Power	W002
P1-B	A1TB3-8	TTY Neutral	
P1-E	A1TB3-9	TTY Ground	
A2	A2		W003
A1PS2TB1-6	A4TB4-6	+6 volts	
A1PS2TB1-12	A4TB4-4	-6 volts	
A1PS2TB1-4	A4TB4-5	Ground	
A2	A2		W004
A1PS2TB1-1	A4J3-A	Ac power	
A1PS2TB1-2	A4J3-B	Ac neutral	
A1PS2TB1-5	A4J3-C	Ground	
A2	A2		W005
A2J1-A	A1TB3-2	KW7/KWX-11 neutral	
A2J1-B	A1TB3-3	Ground	
A2J1-C	A1TB3-1	KW7/KWX-11 power	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A2	A2		W006
A3J1-A	A1TB3-5	KW7/KWX-11 neutral	
A3J1-B	A1TB3-6	Ground	
A3J1-C	A1TB3-4	KW7/KWX-11 power	
A2	A2		W007
A1PS1TB1-6	A4TB1-6	+6 volts	
A1PS1TB1-12	A4TB1-4	-6 volts	
APS1TB1-4	A4TB1-5	Ground	
A2	A2		W008
A1PS1TB1-1	A4J4-A	Ac power	
A1PS1TB1-2	A4J4-B	Ac neutral	
A1PS1TB1-5	A4J4-C	Ground	
A2	A2		W009
A4TB2-1	A1TB3-7	KW7/KWX-11 power	
A4TB2-2	A1TB3-8	KW7/KWX-11 neutral	
A4TB2-3	A1TB3-9	Ground	
A1	A3		W010
A1TB1-1	A1P1-A	Tone keyer/conv power	
A1TB1-2	A1P1-C	Tone keyer/conv neutral	
A1TB1-3	A1P1-B	Ground	
A1	A1		W011
A1TB1-4	A5J1-A	Tone keyer/conv power	
A1TB1-5	A5J1-B	Tone keyer/conv neutral	
A1TB1-6	A5J1-C	Ground	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1	A1		W012
A1TB1-7	A6J1-A	Tone keyer/conv power	
A1TB1-8	A6J1-B	Tone keyer/conv neutral	
A1TB1-9	A6J1-C	Ground	
A1	A2		W013
A1TB2-1	A1J1-Power	Modem/loop PS power	
A1TB2-2	A1J1-neutral	Modem/loop PS neutral	
A1TB2-3	A1J1-Ground	Ground	
A1	A1		W014
A1TB2-4	A1A9-TB1-5	Modem/loop PS power	
A1TB2-5	A1A9TB1-4	Modem/loop PS neutral	
A1TB2-6	A1A9TB1-6	Ground	
A1	A1		W015
A1A9TB1-2	A1A1TB2-1	+B	
A1A9TB1-1	A1A1TB2-2	Loop common	
A1A9TB1-3	A1A1TB2-3	-B	
A1	A1		W016
A1A1TB1-1	A2A1TB2-2	Ground	
A1A1TB1-2	A2A1TB2-4	+5	
A1A1TB1-3	A2A1TB2-5	+12	
A1A1TB1-4	A2A1TB2-6	-12	
A3	A3		W017
TB2-7	A5J2-A	Receiver/control power	
TB2-8	A5J2-B	Receiver/control neutral	
TB2-9	A5J2-C	Ground	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1		A2			W018
	A3TB1-1		J1-Power	Exciter power	
	A3TB1-2		J1-Neutral	Exciter neutral	
	A3TB1-3		J1-Ground	Ground	
A3		A3			W019
	TB2-1		A3J1-Power	Receiver/control power	
	TB2-2		A3J1-Neutral	Receiver/control neutral	
	TB2-3		A3J1-Ground	Ground	
A1		A3			W020
	A3TB1-4		A7J6-Power	Exciter power	
	A3TB1-5		A7J6-Neutral	Exciter neutral	
	A3TB1-6		A7J6-Ground	Ground	
A3		A3			W021
	TB2-4		A9J6-Power	Receiver/control power	
	TB2-5		A9J6-Neutral	Receiver/control neutral	
	TB2-6		A9J6-Ground	Ground	
A1		A1			W022
	A1TB1-1		A4A2J1-1	PA phase A power	
	A1TB1-2		A4A2J1-7	PA phase B power	
	A1TB1-3		A4A2J1-10	PA phase C power	
	A1TB1-4		A4A2J1-15	PA ground	
	A4A2J1-5		A4A2J1-16	Jumper	W022
A1A2A2		A1A3A7			
	J22		J2	Rf out	W100
A1A3A9		A1A3A3			
	J3		J22	Rf in	W101

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A3A7		A1A2A4			
	J4		J1	Local pa rf in	W102
A1A2A4		A1A3A9			
	J4		J5	Receive antenna in	W103
A1A2A4		A1A4A3			
	J1		J1	Local pa rf in	W104
A1A4A3		A1A2A4			
	J9		J2	Pa t/r relay	W105
A3		A1A2A4			
	J10		J3	Remote antenna/remote pa rf in	W106
A5		A1A2A4			
	J1		J4	Receive antenna in	W107
A1A4A3		A3			
	J8		J9	Local pa rf out	W108
A1A2A3					
	J1-G		J1-13	Send	W200
	J1-H		J1-14	Send return	
	J1-K		J1-3	Receive	
	J1-S		J1-4	Receive return	
	Open		J1-8	Shield	
A1A1A7					
	J1-A		P1-5	Spare	W201
	J1-B		P1-6	Spare	
	J1-C		Open	Shield	
	J1-F		Open	Shield	
	J1-G		P1-3	Receive	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A1A7			W201
J1-H	P1-4	Receive return	
J1-L	P1-8	Shield	
J1-K	P1-13	Send	
J1-S	P1-14	Send return	
A1A1A7	A1A1A7		
J4-G	J5-G	Line in	W202
J4-H	J5-H	Ground	
J4-K	J5-K	Line out	
J4-S	J5-S	Ground	
A2A4	A1A1A7		
TB4-1	J2-C	Shield	W203
TB4-2	J2-S	Send	
TB4-4	J2-K	Send	
TB4-8	J2-B	Line in	W202
TB4-9	J2-A	Ground	
TB4-11	J2-H	Line out	
TB4-14	J2-G	Ground	
Open	J2-F	Shield	
Open	J2-L	Shield	W203
A2A2	A2A4		
J3-A	J7-A	Shield	W204
J3-C	J7-C	Loop in	
J3-D	J7-D	Loop out	
A2A3	A2A4		
J7-A	J9-A	Shield	W205
J7-C	J9-C	Loop out	
J7-D	J9-D	Loop out	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A2A2		A2A4			
	E3		J2-A	Shield	W206
	E4		J2-B	Line out	
	E5		J2-C	Line out	
	E6		J2-D	Line out	
A2A3		A2A4			
	E1		J1-B	Line in	W207
	E2		J1-C	Line in	
	E3		J1-A	Shield	
A2A4		A1A1A7			
	TB1-1		J4-S	Ground	W208
	TB1-2		J4-G	Line in	
	TB1-8		J4-K	Line out	
	Open		J4-H	Shield	
A1A1A7		A1A1A3			
	J5-G		TB2-A4	Line in	W209
	J5-H		TB2-B4	Ground	
	J5-K		TB4-E3	Line out	
	J5-S		TB4-F3	Ground	
A2A4		A2A2			
	J8-A		J5-A	Shield	W210
	J8-B		J5-B	TD step	
	J8-C		J5-C	TD step	
	J8-D		J5-D	TD step	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A1A3		A1A3A1			
	TB3-E3		J6	Polar in	W211
	TB3-F3		Shield	Shield	
A1A1A3		A1A3A1			
	TB1-A4		J3	MIL-STD-188C	W212
	TB1-B4		Shield	Shield	
A1A3A1		A1A1A2			
	J4		TB4-E3	AFSK tone	W213
	Shield		TB4-F3	Shield	
A1A3A1		A1A1A2			
	J1		TB2-A4	Audio in	W214
	Shield		TB2-B4	Shield	
A1A1A5		A1A1A2			
	J3-1		TB2-A5	Audio 1 out	W215
	J3-2		TB4-A5	Audio 1 in	
	J3-3		TB2-C5	Audio 2 out	
	J3-4		TB4-C5	Audio 2 in	
	J3-5		TB2-E5	Audio 3 out	
	J3-6		TB4-E5	Audio 3 in	
	J3-7		TB2-A6	Audio 4 out	
	J3-8		TB4-A6	Audio 4 in	
	J3-20		TB2-B5	Audio 1 out return	
	J3-21		TB4-B5	Audio 1 in return	
	J3-22		TB2-D5	Audio 2 out return	
	J3-23		TB4-D5	Audio 2 in return	
	J3-24		TB2-F5	Audio 3 out return	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A1A5		A1A1A2			W215
	J3-25		TB4-F5	Audio 3 in return	
	J3-25		TB2-B6	Audio 4 out return	
	J3-27		TB4-B6	Audio 4 in return	
A1A1A6		A1A1A2			
	J3-1		B2-C6	Audio 5 out	W216
	J3-2		TB4-C6	Audio 5 in	
	3-3		B2-E6	Audio 6 out	
	J3-4		TB4-E6	Audio 6 in	
	3-5		TB2-A7	Audio 7 out	
	J3-6		TB4-7	Audio 7 in	
	J3-7		TB2-C7	Audio 8 out	
	J3-8		TB4-7	Audio 8 in	
	J3-19		Open	Shield	
	J3-20		TB2-D6	Audio 5 out return	
	J3-21		TB4-D6	Audio 5 in return	
	J3-22		TB2-F6	Audio 6 out return	
	J3-23		TB4-F6	Audio 6 in return	
	J3-24		TB2-B7	Audio 7 out return	
	J3-25		TB4-B7	Audio 7 in return	
	J3-26		TB2-D7	Audio 8 out return	
	J3-27		TB4-D7	Audio 8 in return	
A1A1A3		A1A1A5			
	TB1-A5		J2-1	Data 1 out	W217
	TB1-B5		J2-14	Data 1 ground	
	TB1-C5		J2-3	Data 2 out	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A1A3	A1A1A5		W217
TB1-D5	J2-16	Data 2 ground	
TB1-E5	J2-5	Data 3 out	
TB1-F5	J2-18	Data 3 ground	
TB1-A6	J2-7	Data 4 out	
TB1-B6	J2-20	Data 4 ground	
TB3-A5	J2-2	Data 1 in	
TB3-B5	J2-15	Data 1 ground	
TB3-C5	J2-4	Data 2 in	
TB3-D5	J2-17	Data 2 ground	
TB3-E5	J2-6	Data 3 in	
TB3-F5	J2-19	Data 3 ground	
TB3-A6	J2-8	Data 4 in	
TB3-B6	J2-21	Data 4 ground	
A1A1A3	A1A1A6		
TB1-C6	J2-1	Data 5 out	W218
TB1-D6	J2-14	Data 5 ground	
TB1-E6	J2-3	Data 6 out	
TB1-F6	J2-16	Data 6 ground	
TB1-A7	J2-5	Data 7 out	
TB1-B7	J2-18	Data 7 ground	
TB1-C7	J2-7	Data 8 out	
TB1-D7	J2-20	Data 8 ground	
TB3-C6	J2-2	Data 5 in	
TB3-D6	J2-15	Data 5 ground	
TB3-E6	J2-4	Data 6 in	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A1A3	A1A1A6		W218
TB3-F6	J2-17	Data 6 ground	
TB3-A7	J2-6	Data 7 in	
TB3-B7	J2-19	Data 7 ground	
TB3-C7	J2-8	Data 8 in	
TB3-D7	J2-21	Data 8 ground	
Open	J2-13	Shield	
A1A1A3	A1A2A1		
TB2-A5	J21-18	Data 1 out	W219
TB2-B5	J21-7	Data 1 ground	
TB2-C5	J23-18	Data 2 out	
TB2-D5	J23-7	Data 2 ground	
TB2-E5	J25-18	Data 3 out	
TB2-F5	J25-7	Data 3 ground	
TB2-A6	J27-18	Data 4 out	
TB2-B6	J27-7	Data 4 ground	
TB2-C6	J29-18	Data 5 out	
TB2-D6	J29-7	Data 5 ground	
TB2-E6	J31-18	Data 6 out	
TB2-F6	J31-7	Data 6 ground	
TB2-A7	J33-18	Data 7 out	
TB2-B7	J33-7	Data 7 ground	
TB2-C7	J35-18	Data 8 out	
TB2-D7	J35-7	Data 8 ground	
TB2-A5	J22-2	Data 1 in	
TB4-B5	J22-7	Data 1 ground	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A1A3	A1A2A1		W219
TB4-C5	J24-2	Data 2 in	
TB4-D5	J24-7	Data 2 ground	
TB4-E5	J26-2	Data 3 in	
TB4-F5	J26-7	Data 3 ground	
TB4-A6	J28-2	Data 4 in	
TB4-B6	J28-7	Data 4 ground	
TB4-C6	J30-2	Data 5 in	
TB4-D6	J30-7	Data 5 ground	
TB4-E6	J32-2	Data 6 in	
TB4-F6	J32-7	Data 6 ground	
TB4-A7	J34-2	Data 7 in	
TB4-B7	J34-7	Data 7 ground	
TB4-C7	J36-2	Data 8 in	
TB4-D7	J36-7	Data 8 ground	
Open	J21-1	Shield	
Open	J22-1	Shield	
Open	J23-1	Shield	
Open	J24-1	Shield	
Open	J25-1	Shield	
Open	J26-1	Shield	
Open	J27-1	Shield	
Open	J28-1	Shield	
Open	J29-1	Shield	
Open	J30-1	Shield	
Open	J31-1	Shield	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A1A3	A1A2A1		W219
Open	J32-1	Shield	
Open	J33-1	Shield	
Open	J34-1	Shield	
Open	J35-1	Shield	
Open	J36-1	Shield	
A1A1A3	A1A1A1		
TB1-A1	J2-1	TTY 1 in	W220
TB1-C1	J2-3	TTY 2 in	
TB1-E1	J2-5	TTY 3 in	
TB1-A2	J2-7	TTY 4 in	
TB1-C2	J2-9	TTY 5 in	
TB1-E2	J2-11	TTY 6 in	
TB1-A3	J2-13	TTY 7 in	
TB1-C3	J2-15	TTY 8 in	
TB3-A1	J2-2	TTY 1 out	
TB3-C1	J2-37	Signal ground	
TB3-C1	J2-4	TTY 2 out	
TB3-E1	J2-6	TTY 3 out	
TB3-A2	J2-8	TTY 4 out	
TB3-C2	J2-10	TTY 5 out	
TB3-E2	J2-12	TTY 6 out	
TB-A3	J2-14	TTY 7 out	
TB3-C3	J2-16	TTY 8 out	
Open	J2-19	Shield	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A2A1	A1A1A2		
J38-1	Open	Shield	W221
J38-3	TB4-E8	Diversity 8 in	
J38-5	TB2-E8	Diversity 7 in	
J38-7	TB4-8	Diversity 6 in	
J38-9	TB2-C8	Diversity 5 in	
J38-11	TB4-A8	Diveristy 4 in	
J38-13	TB2-A8	Diversity 3 in	
J38-15	TB4-E7	Diversity 2 in	
J38-17	TB2-E7	Diversity 1 in	
J38-36	TB3-E8	Diversity 8 out	
J38-38	TB1-E8	Diversity 7 out	
J38-40	TB3-C8	Diversity 6 out	
J38-42	TB1-C8	Diveristy 5 out	
J38-44	TB3-A8	Diversity 4 out	
J38-46	TB1-A8	Diversity 3 out	
J38-48	TB3-E7	Diversity 2 out	
J38-50	TB1-E7	Diversity 1 out	
A1A1A1	A3		
J1-1	Open	Shield	W222
J1-2	J5-2	TTY 1 transmit	
J1-3	J5-3	TTY 1 return	
J1-4	J5-4	TTY 2 transmit	
J1-5	J5-5	TTY 2 return	
J1-6	J5-6	TTY 3 transmit	
J1-7	J5-7	TTY 3 return	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A1A1	A3		W222
J1-8	J5-8	TTY 4 transmit	
J1-9	J5-9	TTY 4 return	
J1-10	J5-10	TTY 5 transmit	
J1-11	J5-11	TTY 5 return	
J1-12	J5-12	TTY 6 transmit	
J1-13	J5-13	TTY 6 return	
J1-14	J5-14	TTY 7 transmit	
J1-15	J5-15	TTY 7 return	
J1-16	J5-16	TTY 8 transmit	
J1-17	J5-17	TTY 8 return	
J1-34	J5-34	TTY 1 receive	
J1-35	J5-35	TTY 1 return	
J1-36	J5-36	TTY 2 receive	
J1-37	J5-37	TTY 2 return	
J1-38	J5-38	TTY 3 receive	
J1-39	J5-39	TTY 3 return	
J1-40	J5-40	TTY 4 receive	
J1-41	J5-41	TTY 4 return	
J1-42	J5-42	TTY 5 receive	
J1-43	J5-43	TTY 5 return	
J1-44	J5-44	TTY 6 receive	
J1-45	J5-45	TTY 6 return	
J1-46	J5-46	TTY 7 receive	
J1-47	J5-47	TTY 7 return	
J1-48	J5-48	TTY 8 receive	
J1-49	J5-49	TTY 8 return	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A2A1	A1A1A2		
TB1-1	TB3-C4	Composite 1 in	W223
TB1-2	TB3-4	Signal return	
TB1-3	TB3-E4	Composite 2 in	
TB1-4	TB3-F4	Signal return	
TB1-9	TB1-C4	Composite 1 out	
TB1-10	TB1-D4	Signal return	
TB1-11	TB1-E4	Composite 2 out	
TB1-12	TB1-F4	Signal return	
TB2-1	Open	Shield	
A1A1A2	A3		
TB1-A1	J2-1	Radio B2 transmit	W225
TB1-B1	J2-20	Signal return	
TB1-E1	J2-21	Radio B1 receive	
TB1-F1	J2-21	Signal return	
TB1-A2	J2-3	Radio A1 transmit	
TB1-B2	J2-22	Signal return	
TB1-E2	J2-4	Radio A2 receive	
TB1-F2	J2-23	Signal return	
TB1-A3	J2-14	Phone 2W	
TB1-B3	J2-33	Signal return	
TB1-C3	J2-15	Phone 4W transmit	
TB1-D3	J2-34	Signal return	
TB1-A4	J2-32	TTY converter audio 9 in	
TB1-B4	J2-13	Signal return	
TB1-A5	J2-5	TTY keyer audio 1 out	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A1A2	A3		W225
TB1-B5	J2-24	Signal return	
TB1-C5	J2-6	TTY keyer audio 2 out	
TB1-D5	J2-25	Signal return	
TB1-E5	J2-7	TTY keyer audio 3 out	
TB1-F5	J2-26	Signal return	
TB1-A6	J2-8	TTY keyer audio 4 out	
TB1-B6	J2-27	Signal return	
TB1-C6	J2-9	TTY keyer audio 5 out	
TB1-D6	J2-28	Signal return	
TB1-E6	J2-10	TTY keyer audio 6 out	
TB1-F6	J2-29	Signal return	
TB1-A7	J2-11	TTY keyer audio 7 out	
TB1-B7	J2-30	Signal return	
TB1-C7	J2-12	TTY keyer audio 8 out	
TB1-D7	J2-31	Signal return	
Open	J2-19	Shield	
TB3-A1	J3-1	Radio B2 receive	W226
TB3-B1	J3-20	Signal return	
TB3-C1	J3-2	Radio B1 transmit	
TB3-D1	J3-21	Signal return	
TB3-A2	J3-3	Radio A1 receive	
TB3-B2	J3-22	Signal return	
TB3-C2	J3-4	Radio A2 transmit	
TB3-D2	J3-23	Signal return	
TB3-C3	J3-14	Phone 4W receive	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A1A2		A3			W226
	TB3-D3		J3-33	Signal return	
	TB3-E3		J3-13	TTY keyer audio 9 out	
	TB3-F3		J3-32	Signal return	
	Open		J3-19	Shield	
A1A1A3		A3			
	TB1-A8		J4-4	Radio monitor	W227
	TB1-B8		J4-23	Signal return	
	TB1-E8		J4-20	Receive mute	
	TB3-E7		J4-3	Radio control	
	TB3-F7		J4-22	Signal return	
	TB3-E8		J4-1	Keyline	
	Open		J4-2	Shield	
	Open		J4-5	Shield	
	Open		J4-21	Shield	
A1A2A2		A1A1A2			
	TB1-1		TB2-A2	Radio A1 transmit	W228
	TB1-2		TB2-B2	Signal return	
	TB1-3		TB4-C1	Radio B1 transmit	
	TB1-4		TB4-D1	Signal return	
	TB1-5		Open	Shield	
	TB2-1		TB4-C2	Radio A2 transmit	
	TB2-2		TB4-D2	Signal return	
	TB2-3		TB2-A1	Radio B2 transmit	
	TB2-4		TB2-B1	Signal return	
	TB2-5		Open	Shield	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A3A3	A1A1A2		
TB1-1	TB4-A2	Radio A1 receive	W229
TB1-3	TB4-B2	Signal return	
TB1-4	TB2-E1	Radio B1 receive	
TB1-6	TB2-F1	Signal return	
TB1-7	Open	Shield	
TB2-1	TB2-E2	Radio A2 receive	
TB2-3	TB2-F2	Signal return	
TB2-4	TB4-A1	Radio B2 receive	
TB2-6	TB4-B1	Signal return	
TB2-7	Open	Shield	
A1A3A5	A1A1A2		
J1-a	TB3-A1	Radio B2 receive	W230
J1-b	TB3-B1	Signal return	
J1-k	TB3-C2	Radio A2 transmit	
J1-L	TB3-D2	Signal return	
J1-M	TB1-A2	Radio A1 transmit	
J1-N	TB1-B2	Signal return	
J1-P	TB3-C1	Radio B1 transmit	
J1-R	TB3-D1	Signal return	
J1-S	TB1-A1	Radio B2 transmit	
J1-T	TB1-B1	Signal return	
J1-U	TB1-E2	Radio A2 receive	
J1-V	TB1-F2	Signal return	
J1-W	TB3-A2	Radio A1 receive	
J1-X	TB3-B2	Signal return	

Table 7-1. AN/TSC 60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A3A5		A1A1A2			W230
	J1-Y		TB1-E1	Radio B1 receive	
	J1-Z		TB1-F1	Signal return	
A1A2A2		A1A1A3			
	TB2-6		TB4-E8	Keyline	W231
	TB2-7		TB4-F8	Key return	
	J14-2		TB4-E7	Radio control	
	J14-3		TB2-A8	Radio monitor	
	J14-14		TB4-F7	Radio control return	
	J14-15		Open	Shield	
	J14-16		TB2-B8	Radio monitor return	
	J14-17		Open	Shield	
A1A3A3		A1A1A3			
	TB1-10		TB2-E8	Receive mute	W232
	TB1-11		TB2-F8	Ground	
	J14-2		TB4-A8	Radio control	
	J14-3		TB2-C8	Radio monitor	
	J14-14		TB4-B8	Radio control return	
	J14-15		Open	Shield	
	J14-16		TB2-D8	Radio monitor return	
	J14-17		Open	Shield	
A1A3A5		A1A1A3			
	J1-A		TB1-F8	Ground	W233
	J1-B		TB1-E8	Receive mute	
	J1-x		TB3-E8	Keyline	
	J1-y		TB3-F8	Key return	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A3A5		A1A1A3			W233
	J1-CC		TB3-E7	Radio control	
	J1-DD		TB3-F7	Radio control return	
A1A3A5		A1A1A3			
	J1-EE		Open	Shield	W233
	J1-FF		TB1-AB	Radio monitor	
	J1-GG		TB1-B8	Radio monitor return	
	J1-HH		Open	Shield	
A1A3A9		A1A3A3			
	J1-1		J16-37	Ground	W234
	J1-3		J1-20	+ 5-V strap	
	J1-4		J1-6	+ 15-V strap	
	J1-6		J1-34	+ 15-V strap	
	J1-7		J16-9	1-kHz data	
	J1-8		J16-29	8-kHz data	
	J1-9		J16-13	100-kHz data	
	J1-10		J16-33	800-kHz data	
	J1-11		J16-16	4-MHz data	
	J1-12		J16-36	20-MHz data	
	J1-13		J16-27	Rf overload	
	J1-14		J16-2	Keyline	
	J1-23		J16-28	2-kHz data	
	J1-24		J16-11	10-kHz data	
	J1-25		J16-31	80-kHz data	
	J1-26		J16-14	400-kHz data	
	J1-27		J16-34	2-MHz data	

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Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A3A9		A1A3A3			W234
	J1-28		J16-17	10-MHz data	
	J1-30		J16-8	Fault summary	
	J1-39		J16-10	4-kHz data	
	J1-40		J16-30	20-kHz data	
	J1-41		J16-12	41-kHz data	
	J1-42		J16-32	200-kHz data	
	J1-43		J16-15	1-MHz data	
	J1-44		J16-35	8-MHz data	
	J1-46		J16-26	Tune start	
A1A3A7		A1A2A2			
	J1-1		J16-37	Ground	W235
A1A3A7		A1A3A7			
	J1-3		J1-20	+ 5-V strap	
	J1-4		J1-6	+ 15-V strap	
	J1-6		J1-34	+ 15-V strap	
A1A3A7		A1A2A2			
	J1-7		J16-9	1-kHZ data	
	J1-8		J16-29	8-kHz data	
	J1-9		J16-13	100-kHz data	
	J1-10		J16-33	800-kHz data	
	J1-11		J16-16	4-MHz data	
	J1-12		J16-36	20-MHz data	
	J1-13		J16-27	Rf overload	
	J1-14		J16-2	Keyline	
	J1-23		J16-28	2-kHz data	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A3A7	A1A2A2		W235
J1-24	J16-11	10-kHz data	
J1-25	J16-31	80-kHz data	
J1-26	J16-14	400-kHz data	
J1-27	J16-34	2-MHz data	
J1-28	J16-17	10-MHz data	
J1-30	J16-8	Fault summary	
J1-39	J16-10	4-kHz data	
J1-40	J16-30	20-kHz data	
J1-41	J16-12	41-kHz data	
J1-42	J16-32	200-kHz data	
J1-43	J16-15	1-MHz data	
J1-44	J16-35	8-MHz data	
J1-46	J16-26	Tune start	
A1A2A2	A1A2A4		
J15-1	J5-1	Coupler fault	W236
J15-2	J5-2	System key	
J15-3	J5-3	Pa fault	
J15-4	J5-4	ALC/TGC Shield	
J15-5	J5-5	Sidetone enable	
J15-6	J5-6	LV enable	
J15-7	J5-7	HV enable	
J15-8	J5-8	Spare	
J15-19	J5-19	Ground	
J15-20	J5-20	Pa interlock	
J15-21	J5-21	Pa ready	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A2A2		A1A2A4			W236
	J15-22		J5-22	ALC in	
	J15-23		J5-23	TGC in	
	J15-24		J5-4	Exciter tune	
	J15-25		J5-25	Low-power enable	
	J15-26		J5-26	Tune start	
	J15-27		J5-27	Spare	
	J15-37		J5-37	Ground	
A1A2A4		A1A4A3			
	J5-1		J2-18	Coupler fault	W237
	J5-2		J2-3	System key	
	J5-3		J2-4	Pa fault	
	J5-4		J2-14	ALC/TGC shield	
	J5-5		J2-2	Sidetone enable	
	J5-6		J2-8	LV enable	
	J5-7		J2-7	HV enable	
	J5-8		J2-17	Spare	
	J5-19		J2-12	Ground	
	J5-20		J2-10	Pa interlock	
	J5-21		J2-5	Pa ready	
	J5-22		J2-11	ALC in	
	J5-23		J2-13	TGC in	
	J5-24		J2-1	Exciter tune	
	J5-25		J2-6	Low-power enable	
	J5-26		J2-9	Tune start	
	J5-27		J2-20	Spare	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A2A4		A1A4A3			W237
	J5-37		J2-15	Ground	
	Open		J2-16	Shield	
A3		A1A2A4			
	J5-1		J6-26	Tune start	W238
	J5-2		J6-6	LV enable	
	J5-3		J6-24	Exciter tune	
	J5-4		J6-3	Pa fault	
	J5-5		J6-20	Pa interlock	
	J5-6		J6-22	ALC	
	J5-20		J6-2	Key	
	J5-21		J6-7	HV enable	
	J5-22		J6-25	Low power	
	J5-23		J6-5	Sidetone	
	J5-24		J6-21	Pa ready	
	J5-25		J6-23	TGC	
	J5-37		Open	Shield	
A1A4A2		A1A4A3			
	J3-1		J4-1	Ground	W239
	J3-2		J4-2	Ground	
	J3-3		J4-3	+27 V	
	J3-4		J4-4	Ground	
	J3-5		J4-5	+5 V	
	J3-6		J4-6	+5 V	
	J3-7		J4-7	-12 V	
	J3-8		J4-8	-12 V	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A4A2		A1A4A3			W239
	J3-9		J4-9	+ 12 V	
	J3-10		J4-10	+ 12 V	
	J3-12		J4-12	+ 27 V	
	J3-13		J4-13	+ 27 V	
	J3-14		J4-14	230 V ac	
	J3-15		J4-15	230 V ac	
	J3-16		J4-16	230 V ac	
	J3-17		J4-17	230 V ac	
	J3-18		J4-18	Ground	
	J3-19		J4-19	Shield	
	J3-20		J4-20	Remote crowbar A	
	J3-21		J4-21	Remote crowbar B	
	J3-22		J4-22	Remote crowbar C	
	J3-23		J4-23	Remote crowbar D	
	J3-24		J4-24	40-V enable	
	J3-25		J4-25	Dc power on	
	J3-26		J4-26	+ 27 V	
A1A4A2		A1A4A3			
	J2-1		J5-1	+ 5 V	W240
	J2-2		J5-2	+ 12 V	
	J2-3		J5-3	+ 27 V	
	J2-4		J5-4	+ 12 V	
	J2-5		J5-5	-12 V	
	J2-6		J5-6	+ 5 V	
	J2-7		J5-7	+ 35 V	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A4A2	A1A4A3		W240
J2-8	J5-8	+35 V	
J2-9	J5-9	Remote sense	
J2-10	J5-10	+35-V return	
J2-11	J5-11	+35-V return	
J2-12	J5-12	Remote sense	
J2-13	J5-13	+28 V	
J2-14	J5-14	+50/40 V A	
J2-15	J5-15	+50/40 V A	
J2-16	J5-16	Remote sense A	
J2-17	J5-17	+50/40-V return A	
J2-18	J5-18	+50/40-V return A	
J2-19	J5-19	Remote sense A	
J2-20	J5-20	+50/40 V B	
J2-21	J5-21	+50/40 V B	
J2-22	J5-22	Remote sense B	
J2-23	J5-23	+50/40-V return B	
J2-24	J5-24	+50/40-V return B	
J2-25	J5-25	Remote sense B	
J2-26	J5-26	+50/40 V C	
J2-27	J5-27	+50/40 V C	
J2-28	J5-28	Remote sense C	
J2-29	J5-29	+50/40-V return C	
J2-30	J5-30	+50/40-V return C	
J2-31	J5-31	Remote sense C	
J2-32	J5-32	+50/40 V C	

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From		To		Function	Cable no.
A1A4A2		A1A4A3			W240
	J2-33		J5-33	+50/40 V D	
	J2-34		J5-34	Remote sense D	
	J2-35		J5-35	+50/40-V return D	
	J2-36		J5-36	+50/40-V return D	
	J2-37		J5-37	Remote sense D	
A1A4A3		A3			
	J3-1		J6-A	Coupler fault	W241
	J3-2		J6-J	Tune start	
	J3-3		J6-d	Low-power enable	
	J3-4		J6-E	System key	
	J3-11		J6-G	Coupler tune power	
	J3-12		J6-T	Signal ground	
	J3-13		J6-W	Signal ground	
	J3-15		J6-b	230 V ac	
	J3-16		J6-c	230 V ac	
	J3-22		J6-C	Rf interlock	
A1A1A2					
	TB2-A3		Open	TA-312 2-wire audio	W242
	TB2-B3		Open	TA-312 2-wire return	
	TB2-C3		Open	TA-838 4-wire transmit	
	TB2-D3		Open	TA-838 4-wire transmit return	
	TB4-C3		Open	TA-838 4-wire receive	
	TB4-D3		Open	TA-838 4-wire receive return	
	A4		A4		

Table 7-1. AN/TSC-60(V)7 Shelter Cabling Wire List-Continued

From	To	Function	Cable no.
A1A1A2			
J1-A	P1-A	Neutral	W305
J1-B	P1-B	Phase A	
J1-C	P1-C	Phase B	
J1-D	P1-D	Phase C	
J1-E	E2	Gnd	

Table 7-2. Signal Entry Panel A3 Wire List

From	To	Function	Cable no.
J1-A	FL113-1	Coupler fault	Internal wiring
J1-C	FL114-1	Rf interlock	
J1-E	FL115-1	System key	
J1-G	FL116-1	Coupler tune power	
J1-J	FL117-1	Tune start	
J1-M	Ground 3	Jumper	
J1-T	Ground 3	Jumper	
J1-W	Ground 3	Jumper	
J1-b	FL121-1	230 V ac	
J1-c	FL122-1	230-V ac	
J1-d	FL119-1	Low-power enable	
J2-1	FL1-2	B2 transmit	
J2-2	FL7-2	B1 receive	
J2-3	FL9-2	A1 transmit	
J2-4	FL15-2	A2 receive	
J2-5	FL25-2	TTY keyer audio 1	

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
J2-6	FL27-2	TTY keyer audio 2	Internal wiring
J2-7	FL29-2	TTY keyer audio 3	
J2-8	FL31-2	TTY keyer audio 4	
J2-9	FL33-2	TTY keyer audio 5	
J2-10	FL35-2	TTY keyer audio 6	
J2-11	FL37-2	TTY keyer audio 7	
J2-12	FL39-2	TTY keyer audio 8	
J2-13	FL65-2	TTY converter audio in	
J2-14	FL89-2	2-wire phone audio	
J2-15	FL91-2	4-wire phone transmit	
J2-19	Ground 4	Shield ground	
J2-20	FL2-2	B2 transmit return	
J2-21	FL8-2	B1 receive return	
J2-22	FL12-2	A1 transmit return	
J2-23	FL16-2	A2-receive return	
J2-24	FL26-2	TTY keyer audio 1 return	
J2-25	FL28-2	TTY keyer audio 2 return	
J2-26	FL30-2	TTY keyer audio 3 return	
J2-27	FL32-2	TTY keyer audio 4 return	
J2-28	FL34-2	TTY keyer audio 5 return	
J2-29	FL36-2	TTY keyer audio 6 return	
J2-30	FL38-2	TTY keyer audio 7 return	
J2-31	FL40-2	TTY keyer audio 8 return	
J2-32	FL66-2	TTY converter audio in return	
J2-33	FL90-2	2-wire phone audio return	

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
J2-34	FL92-2	4-wire phone transmit return	Internal wiring
J3-1	FL3-2	B2 receive	
J3-2	FL5-2	B1 transmit	
J3-3	FL11-2	A1 receive	
J3-4	FL13-2	A2 transmit	
J3-5	FL49-2	TTY converter audio 1	
J3-6	FL51-2	TTY converter audio 2	
J3-7	FL53-2	TTY converter audio 3	
J3-8	FL55-2	TTY converter audio 4	
J3-9	FL57-2	TTY converter audio 5	
J3-10	FL59-2	TTY converter audio 6	
J3-11	FL61-2	TTY converter audio 7	
J3-12	FL63-2	TTY converter audio 8	
J3-13	FL41-2	TTY keyer audio out	
J3-14	FL93-2	4-wire phone receive	
J3-19	Ground 4	Shield ground	
J3-20	FL4-2	B2 receive return	
J3-21	FL6-2	B1 transmit return	
J3-22	FL14-2	A1 receive return	
J3-23	FL14-2	A2 transmit return	
J3-24	FL50-2	TTY converter audio 1 return	
J3-25	FL52-2	TTY converter audio 2 return	
J3-26	FL54-2	TTY converter audio 3 return	
J3-27	FL56-2	TTY convertor audio 4 return	
J3-28	FL58-2	TTY converter audio 5 return	

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
J3-29	FL60-2	TTY converter audio 6 return	Internal wiring
J3-30	FL62-2	TTY converter audio 7 return	
J3-31	FL64-2	TTY converter audio 8 return	
J3-32	FL42-2	TTY keyer audio out return	
J3-33	FL94-2	4-wire phone receive return	
J4-1	FL17-2	Keyline	
J4-2	Ground 5	Shield ground	
J4-3	FL19-2	Radio control	
J4-4	FL21-2	Radio monitor	
J4-5	Ground 5	Shield ground	
J4-20	FL18-2	Receive mute	
J4-21	Ground 5	Shield ground	
J4-22	FL20-2	Radio control return	
J4-23	FL22-2	Radio monitor return	
J5-1	FL43-2	Tune start	
J5-2	FL45-2	LV enable	
J5-3	FL47-2	Exciter tune	
J5-4	FL67-2	Pa fault	
J5-5	FL69-2	Pa interlock	
J5-6	FL71-2	ALC	
J5-20	FL44-2	Key	
J5-21	FL46-2	HV enable	
J5-22	FL48-2	Low power	
J5-23	FL68-2	Sidetone	
J5-24	FL70-2	Pa ready	

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
J5-25	FL72-2	TGC	Internal wiring
J5-37	Ground 4	Shield	
J6-A	FL113-2	Coupler fault	
J6-C	FL114-2	Rf interlock	
J6-E	FL115-2	System key	
J6-G	FL116-2	Coupler tune power	
J6-J	FL117-2	Tune start	
J6-T	Ground 5	Signal ground	
J6-W	Ground 5	Shield ground	
J6-b	FL121-2	230-V ac	
J6-c	FL122-2	230-V ac	
J6-d	FL119-2	Low-power enable	
J7	J9	Transmit rf out	
J8	J10	Receive rf in	
J9	LA1	Transmit rf out	
J10	LA2	Receive rf in	
J11-2	FL73-2	TTY transmit 1	
J11-3	FL74-2	TTY transmit 1 return	
J11-4	FL75-2	TTY transmit 2	
J11-5	FL76-2	TTY transmit 2 return	
J11-6	FL77-2	TTY transmit 3	
J11-7	FL78-2	TTY transmit 3 return	
J11-8	FL79-2	TTY transmit 4	
J11-9	FL80-2	TTY transmit 4 return	
J11-10	FL81-2	TTY transmit 5	

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
J11-11	FL82-2	TTY transmit 5 return	Internal wiring
J11-12	FL83-2	TTY transmit 6	
J11-13	FL84-2	TTY transmit 6 return	
J11-14	FL85-2	TTY transmit 7	
J11-15	FL86-2	TTY transmit 7 return	
J11-16	FL87-2	TTY transmit 8	
J11-17	FL88-2	TTY transmit 8 return	
J11-34	FL97-2	TTY receive 1	
J11-35	FL98-2	TTY receive 1 return	
J11-36	FL99-2	TTY receive 2	
J11-37	FL100-2	TTY receive 2 return	
J11-38	FL101-2	TTY receive 3	
J11-39	FL102-2	TTY receive 3 return	
J11-40	FL103-2	TTY receive 4	
J11-41	FL104-2	TTY receive 4 return	
J11-42	FL105-2	TTY receive 5	
J11-43	FL106-2	TTY receive 5 return	
J11-44	FL107-2	TTY receive 6	
J11-45	FL108-2	TTY Receive 6 return	
J11-46	FL109-2	TTY receive 7	
J11-47	FL110-2	TTY receive 7 return	
J11-48	FL111-2	TTY receive 8	
J11-49	FL112-2	TTY receive 8 return	
E1	FL1-1	B2-transmit	
E2	FL2-1	B2 transmit return	

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
E3	FL3-1	B2 receive	Internal wiring
E4	FL4-1	B2 receive return	
E5	FL5-1	B1 transmit	
E6	FL6-1	B1 transmit return	
E7	FL7-1	B1 receive	
E8	FL8-1	B1 receive return	
E9	FL9-1	A1 transmit	
E10	FL10-1	A1 transmit return	
E11	FL11-1	A1 receive	
E12	E12-1	A1 receive return	
E13	FL13-1	A2 transmit	
E14	E14-1	A2 transmit return	
E15	FL5-1	A2 receive	
E16	E16-1	A2 receive return	
E17-	E17-1	Keyline	
E18	E18-1	Receive mute	
19	FL19-1	Radio control	
E20	FL20-1	Radio control return	
E21	E21-1	Radio monitor	
E22	E22-1	Radio monitor return	
E23	E24	Jumper	
E24	Ground 3	Ground	
E25	FL25-1	TTY keyer audio 1	
E26	FL26-1	TTY keyer audio 1 return	
E27	FL27-1	TTY keyer audio 2	

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
E28	FL28-1	TTY keyer audio 2 return	Internal wiring
E29	FL29-1	TTY keyer audio 3	
E30	FL30-1	TTY keyer audio 3 return	
E31	FL31-1	TTY keyer audio 4	
E32	FL32-1	TTY keyer audio 4 return	
E33	FL33-1	TTY keyer audio 5	
E34	FL34-1	TTY keyer audio 5 return	
E35	FL35-1	TTY keyer audio 6	
E36	FL36-1	TTY keyer audio 6 return	
E37	FL37-1	TTY keyer audio 7	
E38	FL38-1	TTY keyer audio 7 return	
E39	FL39-1	TTY keyer audio 8	
E40	FL40-1	TTY keyer audio 8 return	
E41	FL41-1	TTY keyer audio out	
E42	FL42-1	TTY keyer audio return	
E43	FL43-1	Tune start	
E44	FL44-1	Key	
E45	FL45-1	LV enable	
E46	FL46-1	HV enable	
E47	FL47-1	Exciter tune	
E48	FL48-1	Low power	
E49	FL49-1	TTY converter audio 1	
E50	FL50-1	TTY converter audio 1 return	
E51	FL51-1	TTY converter audio 2	
E52	FL52-1	TTY converter audio 2 return	

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
E53	FL53-1	TTY converter audio 3	Internal wiring
E54	FL54-1	TTY converter audio 3 return	
E55	FL55-1	TTY converter audio 4	
E56	FL56-1	TTY converter audio 4 return	
E57	FL57-1	TTY converter audio 5	
E58	FL58-1	TTY converter audio 5 return	
E59	FL59	TTY converter audio 6	
E60	FL60-1	TTY converter audio 6 return	
E61	FL61-1	TTY converter audio 7	
E62	FL62-1	TTY converter audio 7 return	
E63	TFL63-1	TTY converter audio 8	
E64	FL64-1	TTY converter audio 8 return	
E65	FL65-1	TTY converter audio 9	
E66	FL66-1	TTY converter audio 9 return	
E67	FL67-1	Pa fault	
E68	FL68-1	Sidetone	
E69	FL69-1	Pa interlock	
E70	FL70-1	Pa ready	
E71	FL71-1	ALC	
E72	FL72-1	TGC	
E73	FL73-1	TTY transmit 1	
E74	FL74-1	TTY transmit 1 return	
E75	FL75-1	TTY transmit 2	
E76	FL76-1	TTY transmit 2 return	
E77	FL77-1	TTY transmit 3	

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
E78	FL78-1	TTY transmit 3 return	Internal wiring
E79	FL79-1	TTY transmit 4	
E80	FL80-1	TTY transmit 4 return	
E81	FL81-1	TTY transmit 5	
E82	FL82-1	TTY transmit 5 return	
E83	FL83-1	TTY transmit 6	
E84	FL84-1	TTY transmit 6 return	
E85	FL85-1	TTY transmit 7	
E86	FL86-1	TTY transmit 7 return	
E87	FL87-1	TTY transmit 8	
E88	FL88-1	TTY transmit 8 return	
E89	FL89-1	2-wire phone audio	
E90	FL90-1	2-wire phone audio return	
E91	FL91-1	4-wire phone transmit	
E92	FL92-1	4-wire phone transmit return	
E93	FL93-1	4-wire phone receive	
E94	FL94-1	4-wire phone receive	
E95	E96	Jumper	
E96	Ground 3	Ground	
E97	FL97-1	TTY 1 receive	
E98	FL98-1	TTY 1 return	
E99	FL99-1	TTY 2 receive	
E100	FL100-1	TTY 2 return	
E101	FL101-1	TTY 3 receive	
E102	FL102-1	TTY 3 return	

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
E103	FL103-1	TTY 4 receive	Internal wiring
E104	FL104-1	TTY 4 return	
E105	FL105-1	TTY 5 receive	
E106	FL106-1	TTY 5 return	
E107	FL107-1	TTY 6 receive	
E108	FL108-1	TTY 6 return	
E109	FL109-1	TTY 7 receive	
E110	FL110-1	TTY 7 return	
E111	FL111-1	TTY 8 receive	
E112	FL112-1	TTY 8 return	
SG1-1	FL1-1	Jumper	
SG1-2	Ground 1		
SG1-2	SG2-2		
SG2-1	FL2-1		
SG2-2	SG3-2		
SG3-1	FL3-1		
SG3-2	SG4-2		
SG4-1	FL4-1		
SG4-2	SG5-2		
SG5-1	FL5-1		
SG5-2	SG6-2		
SG6-1	FL6-1		
SG6-2	SG7-2		
SG7-1	FL7-1		
SG7-2	SG8-2		

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
SG8-1	FL8-1	Jumper	Internal wiring
SG8-2	SG8-2		
SG9-1	FL9-1		
SG9-2	SG10-2		
SG10-1	FL10-1		
SG10-2	SG11-2		
SG11-1	FL11-1		
SG11-2	SG12-2		
SG12-1	FL12-1		
SG13-1	FL13-1		
SG13-2	Ground 1		
SG13-2	SG14-2		
SG14-1	FL14-1		
SG14-2	SG15-2		
SG15-1	FL15-1		
SG15-2	SG16-2		
SG16-1	FL16-1		
SG16-2	SG17-2		
SG17-1	FL17-1		
SG17-2	SG18-2		
SG18-1	FL18-1		
SG18-2	SG19-2		
SG19-1	FL19-1		
SG19-2	SG20-2		
SG20-1	FL20-1		

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
SG20-2	SG21-2	Jumper	Internal wiring
SG21-1	FL21-1		
SG21-2	SG22-2		
SG22-1	FL22-1		
SG25-1	FL25-1		
SG25-2	Ground 1		
SG25-2	SG26-2		
SG26-1	FL26-1		
SG26-2	SG27-2		
SG27-1	FL27-1		
SG27-2	SG28-2		
SG28-1	FL28-1		
SG28-2	SG29-2		
SG29-1	FL29-1		
SG29-2	SG30-2		
SG30-1	FL30-1		
SG30-2	SG31-2		
SG31-1	FL31-1		
SG31-2	SG32-2		
SG32-1	FL32-1		
SG32-2	SG33-2		
SG33-1	FL33-1		
SG33-2	SG34-2		
SG34-1	FL34-1		
SG34-2	SG35-2		

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
SG35-1	FL35-1	Jumper	Internal wiring
SG35-2	SG36-2		
SG36-1	FL36-1		
SG37-1	FL37-1		
SG37-2	Ground 1		
SG37-2	SG38-2		
SG38-1	FL38-1		
SG38-2	SG39-2		
SG39-1	FL39-1		
SG39-2	SG40-2		
SG40-1	FL40-1		
SG40-2	SG41-2		
SG41-1	FL41-1		
SG41-2	SG42-2		
SG42-1	FL42-1		
SG42-2	SG43-2		
SG43-1	FL43-1		
SG43-2	SG44-2		
SG44-1	FL44-1		
SG44-2	SG45-2		
SG45-1	FL45-1		
SG45-2	SG46-2		
SG46-1	FL46-1		
SG46-2	SG47-2		
SG47-1	FL47-1		

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
SG47-2	SG48-2	Jumper	Internal wiring
SG48-1	FL48-1		
SG49-1	FL49-1		
SG49-2	Ground 2		
SG49-2	SG50-2		
SG50-1	FL50-1		
SG50-2	SG51-2		
SG51-1	FL51-1		
SG51-2	SG52-2		
SG52-1	FL52-1		
SG52-2	SG53-2		
SG53-1	FL53-1		
SG53-2	SG54-2		
SG54-1	FL54-1		
SG54-2	SG55-2		
SG55-1	FL55-1		
SG55-2	SG56-2		
SG56-1	FL56-1		
SG56-2	SG57-2		
SG57-1	FL57-1		
SG57-2	SG58-2		
SG58-1	FL58-1		
SG58-2	SG59-2		
SG59-1	FL59-1		
SG59-2	SG60-2		

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
SG60-1	FL60-1	Jumper	Internal wiring
SG61-1	FL61-1		
SG61-2	Ground 2		
SG61-2	SG62-2		
SG62-1	FL62-1		
SG62-2	SG63-2		
SG63-1	FL63-1		
SG63-2	SG64-2		
SG64-1	FL64-1		
SG64-2	SG65-2		
SG65-1	FL65-1		
SG65-2	SG66-2		
SG66-1	FL66-1		
SG66-2	SG67-2		
SG67-1	FL67-1		
SG67-2	SG68-2		
SG68-1	FL68-1		
SG68-2	G69-2		
SG69-1	FL69-1		
SG69-2	SG70-2		
SG70-1	FL70-1		
SG70-2	SG71-2		
SG71-1	FL71-1		
SG71-2	SG72-2		
SG72-1	FL72-1		

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
SG73-1	FL73-1	Jumper	Internal wiring
SG73-2	Ground 2		
SG73-2	SG74-2		
SG74-1	FL74-1		
SG74-2	SG75-2		
SG75-1	FL75-1		
SG75-2	SG76-2		
SG76-1	FL76-1		
SG76-2	SG77-2		
SG77-1	FL77-1		
SG77-2	SG78-2		
SG78-1	FL78-1		
SG78-2	SG79-2		
SG79-1	FL79-1		
SG79-2	SG80-2		
SG80-1	FL80-1		
SG80-2	SG81-2		
SG81-1	FL81-1		
SG81-2	SG82-2		
SG82-1	FL82-1		
SG82-2	SG83-2		
SG83-1	FL83-1		
SG83-2	SG84-2		
SG84-1	FL84-1		
SG85-1	FL85-1		

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
SG85-2	Ground 2	Jumper	Internal wiring
SG85-2	SG86-2		
SG86-1	FL86-1		
SG86-2	SG87-2		
SG87-1	FL87-1		
SG87-2	SG88-2		
SG88-1	FL88-1		
SG88-2	SG89-2		
SG89-1	FL89-1		
SG89-2	SG90-2		
SG90-1	FL90-1		
SG90-2	SG91-2		
SG91-1	FL91-1		
SG91-2	SG92-2		
SG92-1	FL92-1		
SG92-2	SG93-2		
SG93-1	FL93-1		
SG93-2	SG94-2		
SG94-1	FL94-1		
SG97-1	FL97-1		
SG97-2	Ground		
SG97-2	SG98-2		
SG98-1	FL98-1		
SG98-2	SG99-2		
SG99-1	FL99-1		

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
SG99-2	SG100-2	Jumper	Internal wiring
SG100-1	FL100-1		
SG100-2	SG101-2		
SG101-1	FL101-1		
SG101-2	SG103-2		
SG102-1	FL102-1		
SG102-2	SG103-2		
SG103-1	FL103-1		
SG103-2	SG104-2		
SG104-1	FL104-1		
SG104-2	SG105-2		
SG105-1	FL105-1		
SG105-2	SG106-2		
SG106-1	FL106-1		
SG106-2	SG107-2		
SG107-1	FL107-1		
SG107-2	SG108-2		
SG108-1	FL108-1		
SG108-2	SG109-2		
SG109-1	FL109-1		
SG109-2	SG110-2		
SG110-1	FL110-1		
SG110-2	SG111-2		
SG111-1	FL111-1		
SG111-2	SG112-2		

Table 7-2. Signal Entry Panel A3 Wire List-Continued

From	To	Function	Cable no.
SG112-1	FL112-1	Jumper	Internal wiring
SG112-2	SG113-2		
SG113-1	FL113-1		
SG113-2	SG114-2		
SG114-1	FL114-1		
SG114-2	SG115-2		
SG115-1	FL115-1		
SG115-2	SG116-2		
SG116-1	FL116-1		
SG117-1	FL117-1		
SG117-2	Ground 2		
SG117-2	SG118-2		
SG118-1	FL118-1		
SG118-2	SG119-2		
SG119-1	FL119-1		
SG119-2	SG120-2		
SG120-1	FL120-1		
SG120-2	SG121-2		
SG121-1	FL121-1		
SG121-2	SG122-2		
SG122-1	FL122-1		

Table 7-3. Power/Secure Rack Assembly Wire List

From	To	Function
A2A1CB1-B1	A2A1CB2-2	φA Power ECU
A2A1CB1-B2	A2A1CB2-4	φB Power ECU
A2A1CB1-B1	A2A1CB3-2	φA Power pa
A2A1CB1-B3	A2A1CB3-6	φC Power pa
A2A1CB1-B3	A2A1CB3-6	φC Power pa
A2A1CB1-B1	A2A1CB6-LINE	φA power bus
A2A1CB1-B2	A2A1CB4-LINE	φB power bus
A2A1CB1-B3	A2A1CB5-LINE	φC power bus
A2A1CB1-B2	A2A1CB2-4	φB power ECU
A2A1CB2-5	A4FL1-1	φA power
A2A1CB2-3	A4FL2-1	φB power
A2A1CB2-1	A4FL3-1	φC power
A2A1CB3-1	A1A1TB1-1	Pa φC power
A2A1CB3-3	A1A1TB1-2	Pa φB power
A2A1CB3-5	A1A1TB1-3	Pa φA power
A2A1CB4-EQPT	Utility outlet-1	Utility outlet power
A2A1CB5-EQPT	A2S1-1	Light power
A2A1CB5-LINE	A2A1CB7-LINE	φC power bus
A2A1CB6-EQPT	A1A2TB4-1	Rcvr/conv pwr
A2A1CB7-EQPT	A1A2TB3-1	Exctr pwr
A2A1CB4-LINE	A2A1CB9-LINE	φB power bus
A2A1CB7-LINE	A2A1CB11-LINE	φC power bus
A2A1CB8-EQPT	A1A2TB2-1	Modem loop PS pwr
A2A1CB9-LINE	A2A1CB10-LINE	φB power bus

Table 7-3. Power/Secure Rack Assembly Wire List-Continued

From	To	Function
A2A1CB9-EQPT	A1A2TB1-1	Tone keyer/conv pwr
A2A1CB10-EQPT	A2A1TB3-1	KW7/KWX-11 pwr
A2A1CB10-EQPT	A2A1TB3-1	Secure voice pwr
A2A1CB8-LINE	A2A1F8-1	ϕA power bus
A2A1CB8-LINE	A2A1CB6-LINE	ϕA power bus
A2A1CB11-EQPT	A1A1TB1-7	TTY pwr
A2A1CB11-LINE	A2A1CB5-LINE	ϕC power bus
A2A1CB10-LINE	A2A1F7-1	ϕB power bus
A2A1E1	A1A1E1	Ground
A2A1E2	A4E1	Ground
A2A1E2	A1A1TB1-4	Pa ground
A2A1E4	A2A1TB1-3	Ground
A2A1E4	A1A1TB1-9	TTY ground
A2A1E4	A2A1TB3-3	Ground
A2A1E4	Utility outlet-GND	Utility outlet gnd
A2A1F1-1	A2A1XK1-6	ϕA overvoltage
A2A1F2-1	A2A1XK2-6	ϕB overvoltage
A2A1F3-1	A2A1XK3-6	ϕC overvoltage
A2A1F1-2	A2A1S3-2	ϕA voltage monitor
A2A1F2-2	A2A1S3-3	ϕB voltage monitor
A2A1F3-2	A2A1S3-4	ϕC voltage monitor
A2A1F4-2	A2A1S3-8	ϕA A monitor
A2A1F5-2	A2A1S3-9	ϕB A monitor
A2A1F6-2	A2A1S3-10	ϕC A monitor
A2A1F7-1	A2A1F9-1	ϕB power bus

Table 7-3. Power/Secure Rack Assembly Wire List-Continued

From	To	Function
A2A1M2+	A2A1S3-6	Voltmeter
A2A1M1+	A2A1S3-12	Ammeter
A2A1M4+	A2A1F1-2	400-Hz meter
A2A1M3+	A2A1M4+	50/60-Hz meter
A2A1M1-	A2A1M2-	Neutral
A2A1M2-	A2A1M3-	Neutral
A2A1M3-	A2A1M4-	Neutral
A2A1M4-	A2A1TB1-1	Neutral
A2A1S2-1	A2A1S2-4	Jumper
A2A1S2-2	A2A1S2-5	Power jumper
A2A1S2-2	A2A1S1-2	Light power
A2A1S2-1	A2A7S7-No	Light power
A2A1S2-6	A2A1S2-3	Jumper
A2A1TB1-1	A2A1TB1-2	Neutral bus
A2A1TB1-2	A2A1TB1-3	Neutral bus
A2A1TB1-2	A2A1CB1	Neutral bus
A2A1TB1-3	A2A1TB1-4	Neutral bus
A2A1TB1-4	A2A1TB1-5	Neutral bus
A2A1TB1-4	A4FL4-1	Neutral bus
A2A1TB1-5	A2A1TB1-6	Neutral bus
A2A1TB1-5	DS1A-WHT	Light 1A neutral
A2A1TB1-6	A2A1TB1-7	Neutral bus
A2A1TB1-8	Utility outlet-2	Utility outlet neutral
A2A1TB1-7	A2A1TB1-8	Neutral bus
A2A1TB1-7	A2A1TB3-2	KW7/KWX-11 neutral

Table 7-3. Power/Secure Rack Assembly Wire List-Continued

From	To	Function
A2A1TB1-7	A2A1TB3-2	Neutral bus
A2A1TB1-8	A5E1	Shelter blower neutral
A2A1TB2-1	A2A1TB2-2	Neutral bus
A2A1TB2-2	A2A1TB2-3	Neutral bus
A2A1TB2-2	A1A1TB1-2	Tone keyer/conv neutral
A2A1TB2-3	A2A1TB2-4	Neutral bus
A2A1TB2-3	A1A1E12	Rack blower neutral
A2A1TB2-4	A2A1TB2-5	Neutral bus
A2A1TB2-4	A1A2TB3-2	Exciter neutral
A2A1TB2-5	A2A1TB2-6	Neutral bus
A2A1TB2-5	A1A2TB2-2	Modem/loop PS neutral
A2A1TB2-6	A2A1TB2-7	Neutral bus
A2A1TB2-6	A1A1TB1-8	TTY neutral
A2A1TB2-7	A1A2TB4-2	Rcvr/cont neutral
A2A1TB3-1	A2A1TB3-4	Power bus
A2A1TB3-1	A2A1TB3-4	Power jumper
A2A1TB3-2	A2A1TB3-5	Neutral bus
A2A1TB3-2	A2A1TB3-5	Neutral jumper
A2A1TB3-3	A2A1TB3-6	Ground bus
A2A1TB3-3	A2A1TB3-3	Ground jumper
A2A1TB3-4	A2A1TB3-7	Power bus
A2A1TB3-4	A2A1TB3-7	Power jumper
A2A1TB3-5	A2A1TB3-8	Neutral bus
A2A1TB3-5	A2A1TB3-8	Neutral jumper
A2A1TB3-6	A2A1TB3-9	Ground bus

Table 7-3. Power/Secure Rack Assembly Wire List-Continued

From	To	Function
A2A1TB3-6	A2A1TB3-9	Ground jumper
A2A1TB4-1	DS1A-BLK	Light 1A power
A2A1TB4-2	A2A1TB4-3	Power jumper
A2A1TB4-2	DS1B-BLK	Light IB power
A2A1TB4-3	A2A1TB4-4	Power jumper
A2A1TB4-3	DS2A-BLK	Light 2A power
A2A1TB4-4	A2A1TB4-5	Power jumper
A2A1TB4-4	DS2B-BLK	Light 2B power
A2A1TB4-5	DS3A-BLK	Light 3A power
A2A1TB4-5	DS3B-BLK	Light 3B power
A2A1TB4-6	A2A1TB4-7	Neutral jumper
A2A1TB4-6	DS1B-WHT	Light 1B neutral
A2A1TB4-7	DS2A-WHT	Light 2A neutral
A2A1TB4-8	DS2B-WHT	Light 2 B neutral
A2A1TB4-7	A2A1TB4-8	Neutral jumper
A2A1TB4-9	DS3A-WHT	Light 3A neutral
A2A1TB4-9	DS3B-WHT	Light 3B neutral
A2A1TB4-8	A2A1TB4-9	Neutral jumper
A2A1TB4-6	A2A1TB1-6	Neutral jumper
A2A5E1-BLK	A2A5FL1-2	ϕA power
A2A5E1-WHT	A2A5E5	Ground
A2A5E2-BLK	A2A5FL2-2	ϕB power
A2A5E2-WHT	A2A6E5	Ground
A2A5E3-BLK	A2A5FL3-2	ϕC power
A2A5E3-WHT	A2A6E5	Ground

Table 7-3. Power/Secure Rack Assembly Wire List-Continued

From	To	Function
A2A5E8	A2A1E1	Ground bus
A2A5FL4-2	A2A6CB1-1	Utility outlet pwr
A2A5FL1-1	A2A1CB1-T1	φA power input
A2A5FL3-1	A2A1CB1-T2	φB power input
A2A5FL2-1	A2A1CB1-T3	φC power input
A2A5FL1-1	A2A1TB1-1	Neutral
A2A5FL1-1	A2A1TB2-1	Neutral
A2A5FL4-1	A2A1F1-1	φA voltage monitor
A2A5FL3-1	A2A1F2-1	φB voltage monitor
A2A5FL2-1	A2A1F3-1	φC voltage monitor
A2A5FL5-1	A2A1F4-1	φA A monitor
A2A5FL6-1	A2A1F5-1	φB A monitor
A2A5FL7-1	A2A1F6-1	φC A monitor
A2A5T1-X1	A2A5FL5-2	Current xfmr φA
A2A5T2-X1	A2A5FL6-2	Current xfmr φB
A2A5TB3-X1	A2A5FL7-2	Current xfmr φC
A2A5T1-2	A2A5T2-2	Ground
A2A5T2-2	A2A5T3-2	Ground
A2A5T3-2	A2A6E6	Ground
A2A6CB1-2	A2A6J2-1	Utility outlet power
A2A6E7	A2A5FL4-2	Primary pwr-neutral
A2A6E7	A2A5E8	Ground
A2A6J1-4	A2A6E7	Primary pwr-neutral
A2A6J1-1	A2A5FL1-2	Primary pwr-φA
A2A6J1-2	A2A5FL2-2	Primary pwr-φB

Table 7-3. Power/Secure Rack Assembly Wire List-Continued

From	To	Function
A2A6J1-3	A2A5FL3-2	Primary pwr-ΦC
A2A6J2-1	A2A6J3-1	Pwr jumper
A2A6J3-2	A2A6J2-2	Neutral jumper
A2A6J3-2	A2A6E4	Neutral jumper
A2A6J3-3	A2A6J2-3	Ground
A2A6J2-3	A2A6E6	Ground
A2A7S1-C	A2A1S2-3	Light power
A2A7S1-NC	A2A1TB4-1	Light power
A2A7S1-NO	A2A1TB4-2	Light power
A2A1XF7-2	A5FL1-2	Shelter blower power
A2A1XF8-2	A5FL2-2	Shelter blower power
A2A1XF9-2	A1A1EB	Rack blower power
A2A1XK1-6	A2A1XK1-1	Jumper
A2A1XK1-1	A2A1XK2-1	Jumper
A2A1XK2-1	A2A1XK3-1	Jumper
A2A1XK1-8	A2A1XK2-8	Jumper
A2A1XK2-8	A2A1XK3-8	Jumper
A2A1XK3-8	A2A1CB1	Hi/lo voltage shunt trip
A2A1XK1-7	A2A1XK2-7	Jumper
A2A1XK2-7	A2A1XK3-7	Jumper
A2A1XK3-7	A2A1TB1-3	Jumper

CROSS-REFERENCE INDEX

(Prefix each Reference Number with the Chapter Number by the Column.)
(KEY: Numbers preceded by ''f'' are illustrations; ''t'' are tables; others are paragraphs.)

OFFICIAL NOMENCLATURE Common Name	Chapter 1 General Information	Chapter 2 Installation	Chapter 3 Operation	Chapter 4 Principles of Operation	Chapter 5 Maintenance
Audio Jackfield	4.22, t3		4, f3, t2	3.1.4.	
Blower Assembly	4.21		9, 11.4.2, 13.10, f8, t7		
Control-Monitor C-11070/TSC-60(V) (Control-Monitor)	4.4, t3	f5	11.2.5, 12.1.4, 13.9	3.2	t9, t34
Communication Central AN/TSC-60(V)7 (Shelter)	2, 3, f1-f7, t1-t3	1, 9, 10, 12	10, 14	3	1,6
DC Jackfield	4.23, t3		5, f4, t4	3.15	
Environmental Control Unit	t3		11.2.2, 11.4.1, 13.11		
Equipment Rack	4.3, f6, t3				
Bandpass Filter F-1531/TSC-60(V), Preselector	4.7, t1-t3		11.2.5, 11.2.6, 11.4.8, 12.8	3.2	11, t21-t24
HF-8023 Power Amplifier	4.15, t1-t3		11.2.3, 11.4.9, 12.1.3, 13.6	3.2	6.1, 6.2, t7
HF-8032 Power Supply	4.16, t1-t3		11.4.10, 13.7	3.2	
HF-8040 Antenna Coupler	4.17, f7, t1-t3			3.2	f1, f11-f16, f20, t10, t33
High-Level Interface	4.12, t1-t3	11.1.2		3.3	12, t25, t27
Loop Power Supply	4.11, t1-t3	11.1.5	11.2.7		
Model 1290 FSK Modem	4.10, t1-t3	11.1.1	11.2.7, 11.4.3 12.3.4, 13.3	3.3	13, f17, f18, t2, t28, t29

CROSS-REFERENCE INDEX (Continued)

(Prefix each Reference Number with the Chapter Number by the Column.)
(KEY: Numbers preceded by "f" are illustrations; "t" are tables; others are paragraphs.)

OFFICIAL NOMENCLATURE Common Name	Chapter 1 General Information	Chapter 2 Installation	Chapter 3 Operation	Chapter 4 Principles of Operation	Chapter 5 Maintenance
FSK Modem MCP-1000T/LCO	4.13, t1, t3		11.4.4, 12.3.3, 13.2, 14.3	3.3	t2
Power Entry Panel	4.2, f2		2, 13.2, f1, t1	3.5.1	
Power Distribution Panel Assembly	4.24, t3		3, 13.3, f2, t2	3.5.3	
Radio Patch Panel	4.18, t3		8, f7, t6	3.1.2, 7	
Receive Antenna	4.25, t1, t3	9.3, 13.4, f1	15.2	3.2	
Radio Receiver R-2222/TSC-60(V) (Receiver)	4.5, t1-t3		11.2.5, 11.4.7, 12.1.1, 13.4	3.2	9, f3, f4, t5, t8, t13-t16
Secure Patch Panel	4.19, t3		7, f6, t5	3.13, 6	
Signal Entry Panel	4.1, f2, t3			3.1.1	
Telephone Set TA-312/PT	2.3, t4		12.2	3.4	
Telephone Set TA-838/TT	2.3, t4		12.2	3.4	
Communications Terminal AN/UGC-74A(V)3 (Teletypewriter)	4.14, t4		11.2.10, 11.4.11, 12.3.1, 13.1	3.3	t2
Tone Converter TC-301F	4.8, t2, t3	11.1.3	11.2.8, 12.3.5	3.3	t2, t31, t32, f19
Tone Keyer TK-201F	4.9, t2, t3	11.1.4	11.2.8, 12.3.5	3.3	t2, t31, t32
Transmit Antenna	4.26, f7, t1, t3	9.4, 13.3, f2, f3	15.1	3.2	

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(Prefix each Reference Number with the Chapter Number by the Column.)
(KEY: Numbers preceded by "f" are illustrations; "t" are tables; others are paragraphs.)

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Radio Transmitter T-1453/TSC-60(V) (Exciter)	4.6, t1-t3		11.2.6, 11.4.5, 12.1.2, 13.5	3.2	10, f5, f6, f8-f10, t6, t8, t17-t19
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APPENDIX A

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

A-1. General.

This appendix provides a summary of the maintenance operations for the AN/TSC-60(V)7. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

A-2. Maintenance Function.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

A-3. Column Entries.

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "work time" figure in the apppropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "work time" figures will be shown for each category. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C – Operator/Crew
O – Organizational
F – Direct Support
H – General Support
D – Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

A-4. Tool and Test Equipment Requirements (Sect. III).

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

A-5. Remarks (Sect. IV).

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	COMMUNICATIONS CENTRAL, AN/TSC-60(V)7	INSPECT		0.3					C
		TEST		0.5					C
		SERVICE		0.2					C
		ADJUST		0.3	1.5				C,D,E
		REPLACE		0.6					
		INSTALL		0.5					
		REPAIR			0.5			1 through 22	A,E
		OVERHAUL					120		B
	POWER CABLES SIGNAL CABLES								
01	SHELTER, WIRED								
0101	SHELTER, ELECTRICAL EQUIPMENT S-651/TSC-60(V)7 656-6882-001/13499								F
0102	RACK, COMMUNICATIONS 656-6883-001/13499 A1								
010201	JACKFIELD, AUDIO JB-4-24M/70674 A1A1A2	INSPECT		0.1					C
		TEST		0.1					C
		REPAIR			0.3			1,15	E
010202	JACKFIELD, DC A1A1A3								SEE 010201
010203	PANEL, VOLTMETER 656-6903-001/13499 A1A1A4	INSPECT		0.1					C
		TEST		0.1					C
		REPAIR			0.2			1,15	E
010204	SHELF, KEYER CONVERTER 656-6985-001/13499 A1A1A5	INSPECT		0.1					C
		TEST		0.1					C
		REPAIR			0.2			1,15	E
010205	SHELF, KEYER CONVERTER A1A1A6								SEE 010204
010206	PANEL, SECURE PATCH 656-6899-001/13499 A1A1A7	INSPECT		0.1					C
		TEST		0.1					C
		REPAIR			0.2			1,15	E
010207	PANEL, RADIO PATCH 656-5894-001/13499	INSPECT		0.1					C
		TEST		0.1					C
		REPAIR			0.3			1,15	E
0103	ASSEMBLY, POWER/SECURE 656-5894-001/13499 A2	INSPECT		0.1					C
		TEST		0.1					C
		REPAIR			0.5			1,15	E
010301	POWER SUPPLY, 2 EA. LCD-A-11/57209 P/O A2	TEST		0.1				2	C
		ADJUST			0.1			2	
		REPLACE			0.2			15	
		REPAIR							[illegible]

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
0104	ASSEMBLY, SIGNAL ENTRY	INSPECT		0.1					C
	656-6889-001/13499	TEST		0.1					C
	A3	REPAIR		0.1	0.5			1,15	D,E
0105	ASSEMBLY, FAN	INSPECT		0.1					C
	656-6887-001/13499	TEST		0.1					C
	A5	REPAIR			1.0			1,15	E
0106	ASSEMBLY, TX ANTENNA/COUPLER	INSPECT		0.1					
	INSTALLATION KIT	REPLACE		0.1					
	656-6888-001/13499								
0107	INSTALLATION ANCILLARY EQUIPMENT	INSPECT		0.1					
	656-6889-001	REPLACE		0.1					
		REPAIR		0.1					D
0108	ASSEMBLY POWER ENTRY PANEL	INSPECT		0.1					
	656-6902-001/13499	REPAIR			0.4			1,15	E
02	VFT 8 CHANNEL MODEM GROUP								P
0201	INTERFACE, HIGH LEVEL, 1290 HL	INSPECT		0.1					C,P
	126-5192-002/13499	TEST		0.2				2	C,G
	A1A1	REPAIR			0.2			1,2,4,15 20,21,22	E,A
020101	ASSEMBLY, 1290 HL PCB	REPLACE		0.1					
	D5268/15230	REPAIR							A
	A1A1A1 THRU A1A1A8								
0202	MODEM, FSK, 8 CHANNEL	INSPECT		0.1					C,P
	1290/15230	TEST		0.2				2,4,20,21,22	C,G
	A1A2A1	ALIGN			0.3			2,4,8,15, 20,21,22	
		ADJUST			0.3			2,4,8,15, 20,21,22	
		REPAIR			0.2			1,2,4,8, 15,20,21,22	E,A
020201	DEMODULATOR, FSK, PCB	ALIGN			0.1			2,4,8,15, 20,21,22	
	D5181/15230	ADJUST			0.1			2,4,8,15, 20,21,22	
	A1A2A1A1/A3/A5/A7/A9, A1A2A1A11/A13/A15	REPLACE			0.1				
		REPAIR							A
020202	MODULATOR, FSK, PCB	ALIGN			0.1			2,4,8,15, 20,21,22	
	D5180/15230	ADJUST			0.1			2,4,8,15 20,21,22	
		REPLACE			0.1				
		REPAIR							A

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
020203	COMPOSITE, MODEM, PCB	ALIGN			0.1			4,8,15, 20,21,22	
	D5216/15230	ADJUST			0.1			4,15, 20,21,22	
	A1A2A1/A17	REPLACE			0.1				
		REPAIR							A
020204	ASSEMBLY, POWER SUPPLY	REPLACE			0.1			15	
	D5375/15230	REPAIR							A
	A1A2A1A118								
0203	POWER SUPPLY, LOOP	INSPECT		0.1					P
	106A-1/15230	TEST			0.1			2	
	A1A1A9	REPAIR		0.1					D
		REPLACE			0.2			15	
03	KEYER, TONE KY-778	INSPECT		0.1	0.2			15	H
	9041-6001-006/96238	TEST		0.2					C
	A1A1A5A1/A3/A5/A7 AND	ADJUST			0.1			2,4,8, 15	
	A1A1A6A1/A3/A5/A7								
		REPLACE			0.1				
		REPAIR							A
04	CONVERTER, FREQUENCY SHIFT,	INSPECT		0.1					H
	CV-3116(P)/TCC	TEST		0.1					C
	9041-6002-001/96238	ADJUST			0.1			2,4,8,15, 20,21,22	E
	A1A1A5A2/A4/A6/A8 AND								
	A1A1A6A2/A4/A6/A8	REPLACE			0.1				
		REPAIR							A
05	TRANSMITTER, RADIO T-1453/TSC-60(V)	INSPECT		0.1					N
	622-3473-005/13499	TEST		0.2					G,C,D
	A1A2A2	ADJUST		0.1					D
		ALIGN			0.3			2,7,8,9,11, 14,15,20	E.G
		REPAIR			0.5			1,2,3,4, 7,8,11,14, 15,20,21,22	E.A.G
0501	POWER SUPPLY	TEST			0.1			2,4,15,20, 21,22	G
	635-9649-001/13499								
	A1	REPLACE			0.2			15	
		REPAIR							A
0502	ASSEMBLY, FRONT PANEL	TEST			0.2			1,2,8	
	634-8199-002/13499	REPAIR			0.6			2.3,15	E
	A2								
050201	ASSEMBLY, LED STATUS	REPLACE			0.2			3,15	
	635-0825-012/13499	REPAIR							A
	A2A1								
050202	ASSEMBLY, MOUNTING BOARD	REPLACE			0.2			3.15	
	638-6597-001/13499	REPAIR							A
	A2A2								

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
050203	ASSEMBLY, FREQUENCY SWITCHBOARD	REPLACE			0.5			3,15	
	635-0830-001/13499	REPAIR							A
	A2A3								
050204	ASSEMBLY, FREQUENCY DISPLAY	REPLACE			0.5			3,15	
	637-1781-006/13499	REPAIR							A
	A2A5								
0503	ASSEMBLY, CHANNEL A2/B2 AUDIO	ADJUST			0.1			8,11,15	E,G
	637-6476-003/13499	REPLACE			0.2			3,15	
	A3	REPAIR							A
0504	ASSEMBLY, CHANNEL A1/B1 AUDIO	ADJUST			0.1			8,11,15	E,G
	637-6476-001/13499	REPLACE			0.2			3,15	
	A4	REPAIR							A
0505	ASSEMBLY, CHANNEL B2 IF	TEST			0.1			8	G
	638-6636-003/13499	REPLACE			0.2			15	
	A5	REPAIR							A
0506	ASSEMBLY, CHANNEL A2 IF	TEST			0.1			8	G
	638-6636-002/13499	REPLACE			0.2			15	
	A6	REPAIR							A
0507	ASSEMBLY, CHANNEL B1 IF	TEST			0.1			8	G
	638-6636-001/13499	REPLACE			0.2			15	
	A7	REPAIR							A
0508	ASSEMBLY, CHANNEL A1 IF	TEST			0.2			8	G
	638-6659-001/13499	REPLACE			0.2			15	
	A8	REPAIR							A
0509	ASSEMBLY, RF TRANSLATOR	TEST			0.1			8,11	G
	637-1768-002/13499	REPLACE			0.2			15	
	A9	REPAIR							A
0510	CONTROL LOGIC PCB	TEST			0.2			2	G
	638-6622-001/13499	REPLACE			0.2			3,15	
	A10	REPAIR							A
0511	PARALLEL INPUT PCB	TEST			0.2			2	G
	642-3135-001/13499	REPLACE			0.2			3,15	
	A11	REPAIR							A
0512	PARALLEL OUTPUT PCB	TEST			0.2			2	G
	642-3137-001/13499	REPLACE			0.2			3,15	
	A12	REPAIR							A
0513	SERIAL INTERFACE PCB	TEST			0.2			2,4,20,21,22	G
	638-6896-002/13499	REPLACE			0.2			3,15, 20,21,22	
	A13								
		REPAIR							A
0514	ASSEMBLY, VOLTAGE REGULATOR	TEST			0.1			2	G
	635-0656-001/13499	REPLACE			0.2			3,15	
	A14	REPAIR							A

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
0515	ASSEMBLY, SUBCARRIER 638-6992-001/13499 A15	TEST REPLACE REPAIR			0.1 0.2			2,7,11 15	G A
0516	ASSEMBLY, REFERENCE 642-2451-001/13499 A16	TEST REPLACE REPAIR			0.1 0.2			2,7,11 15	G A
051601	ASSEMBLY, EXTERNAL PHASE LOCK 635-0655-001/13499 A16A4	TEST REPLACE REPAIR			0.1 0.2			2,7,11 15	G A
0517	ASSEMBLY, END DECADE 635-0657-001/13499 A19	TEST REPLACE REPAIR			0.1 0.2			2,7,11 15	G A
0518	ASSEMBLY, 1 KHZ DECADE 623-2080-003/13499	TEST REPLACE REPAIR			0.1 0.2			2,7,11 15	G A
0519	ASSEMBLY, 10 KHZ DECADE 623-2080-002/13499 A21	TEST REPLACE REPAIR			0.1 0.2			2,7,11 15	G A
0520	ASSEMBLY, 100 KHZ DECADE 623-2080-001/13499 A22	TEST REPLACE REPAIR			0.1 0.2			2,7,11 15	G A
0521	ASSEMBLY, OUTPUT MODULE 635-4930-002/13499 A23	TEST REPLACE REPAIR			0.1 0.2			2,7,11 15	A
0522	ASSEMBLY, RFI FILTER 637-2712-001/13499 A24	TEST REPLACE REPAIR			0.2 0.2			1 15	A
0523	ASSEMBLY, SIDEBOARD 634-8211-001/13499 A25	TEST REPLACE REPAIR			0.4 0.5			1 15	A
0524	ASSEMBLY, SYNTHESIZER CHASSIS 634-8201-001/13499 A27	REPLACE REPAIR			0.2			15	A
0525	ASSEMBLY, OVEN OSCILLATOR 637-9135-001/13499 A29	TEST REPLACE REPAIR			0.1 0.2			2,7,11 15	G A
0526	ASSEMBLY, FREQUENCY STANDARD SWITCH 646-6558-001/13499 A30	TEST REPLACE REPAIR			0.1 0.2			2,11 15	G A

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
06	COMMUNICATIONS TERMINAL, AN/UGC-74A(V)3 A1A2A3								I
07	MODEM, FSK MPC-1000T/LOC/59264 A1A3A1								Q
08	RECEIVER, RADIO R-2222/TSC-60(V) 622-3475-006/13499 A1A3A3	INSPECT		0.1					O
		TEST		0.2					G,C,D
		ADJUST		0.1					D
		ALIGN			0.3			2,4,5,6, 7,8,9,14, 15,20,21,22	E,G
		REPAIR			0.5			1—9,14, 15,20,21,22	E,A,G
0801	ASSEMBLY, POWER SUPPLY 635-9649-001/13499 A1	TEST			0.1			2,4,15, 20,21,22	G
		REPLACE			0.2			15	
		REPAIR							A
0802	ASSEMBLY, FRONT PANEL 634-8200-002/13499 A2	TEST			0.2			1,2,8	
		REPAIR			0.6			1,3,15	E
080201	ASSEMBLY, LED STATUS 635-0825-013/13499 A2A1	REPLACE			0.2			3,15	
		REPAIR							A
080202	ASSEMBLY, MOUNTING BOARD 638-6873-002/13499 A2A2	REPLACE			0.2			3,15	
		REPAIR							A
080203	ASSEMBLY, FREQUENCY SWITCHBOARD 635-0830-002/13499 A2A3	REPLACE			0.2			3,15	
		REPAIR							A
080204	ASSEMBLY, FREQUENCY DISPLAY 637-1781-008/13499 A2A5	REPLACE			0.2			3,15	
		REPAIR							A
0803	ASSEMBLY, A2/B2 AUDIO PCB 635-0748-002/13499 A25	ADJUST			0.1			5,6,8 14	G,E
		REPLACE			0.2			3,15	
		REPAIR							A
0804	ASSEMBLY, A1/B1 AUDIO PCB 635-0748-002/13499 A26	ADJUST			0.1			5,6,8, 14	G,E
		REPLACE			0.2			3,15	
		REPAIR							A
0805	ASSEMBLY, CHANNEL B2 IF 638-6975-003/13499 A5	TEST			0.1			5,6,8, 14	G
		REPLACE			0.2			3,15	
		REPAIR							A

SECTION II. MAINTENANCE ALLOCATION CHART
FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
0806	ASSEMBLY, CHANNEL A2 IF 638-6975-002/13499 A6	TEST			0.1			5,6,8, 14	G
		REPLACE			0.2			3,15	
		REPAIR							A
0807	ASSEMBLY, CHANNEL B1 IF 638-6975-001/13499 A7	TEST			0.1			5,6,8, 14	G
		REPLACE			0.2			3,15	
		REPAIR							A
0808	ASSEMBLY, CHANNEL A1 IF 638-6871-001/13499 A8	TEST			0.2			5,6,8, 14	G
		REPLACE			0.2			3,15	
		REPAIR							A
0809	ASSEMBLY, RF TRANSLATOR 637-1768-003/13499 A9	TEST			0.1			5,6,14	G
		REPLACE			0.2			15	
		REPAIR							A
0810	CONTROL LOGIC PCB 638-6629-001/13499 A10	TEST			0.2			2	G
		REPLACE			0.2			3,15	
		REPAIR							A
0811	PARALLEL INPUT PCB 642-3135-001/13499 A11	TEST			0.2			2	G
		REPLACE			0.2			3,15	
		REPAIR							A
0812	PARALLEL OUTPUT PCB 642-3137-001/13499 A12	TEST			0.2			2	G
		REPLACE			0.2			3,15	
		REPAIR							A
0813	SERIAL INTERFACE PCB 638-6896-002/13499 A13	TEST			0.2			2,4	G
		REPLACE			0.2			3,15	
		REPAIR							A
0814	ASSEMBLY, VOLTAGE REGULATOR 635-0656-001/13499 A14	TEST			0.1			2	G
		REPLACE			0.2			3,15	
		REPAIR							A
0815	ASSEMBLY, SUBCARRIER 638-6962-001/13499 A15	TEST			0.1			2,7,11	G
		REPLACE			0.2			15	
		REPAIR							A
0816	ASSEMBLY, FREQUENCY REFERENCE 642-2451-001/13499 A16	TEST			0.1			2,7,11	G
		REPLACE			0.2			15	
		REPAIR							A
081601	ASSEMBLY, EXTERNAL PHASE LOCK 635-0655-001/13499 A16A4	TEST			0.1			2,7,11	G
		REPLACE			0.2			15	
		REPAIR							A
0817	ASSEMBLY, END DECADE 635-0657-001/13499 A19	TEST			0.1			2,7,11	G
		REPLACE			0.2			15	
		REPAIR							A

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
0818	ASSEMBLY, 1 KHZ DECADE 623-2080-003/13499 A20	TEST			0.1			2,7,11	G
		REPLACE			0.2			15	
		REPAIR							A
0819	ASSEMBLY, 10 KHZ DECADE 623-2080-002/13499 A21	TEST			0.1			2,7,11	G
		REPLACE			0.2			15	
		REPAIR							A
0820	ASSEMBLY, 100 KHZ DECADE 623-2080-001/13499 A22	TEST			0.1			2,7,11	G
		REPLACE			0.2			15	
		REPAIR							A
0821	ASSEMBLY, OUTPUT MODULE 635-4930-002/13499 A23	TEST			0.1			2,7,11	G
		REPLACE			0.2			15	
		REPAIR							A
0822	ASSEMBLY, SYNTHESIZER CHASSIS 634-8201-001/13499 A24	REPLACE			0.2			15	
		REPAIR							A
0823	ASSEMBLY, RFI FILTER 637-2712-004/13499 A27	TEST			0.2			1	
		REPLACE			0.2			15	
		REPAIR							A
0824	ASSEMBLY, SIDEBOARD 634-8224-001/13499 A28	TEST			0.4			1	
		REPLACE			0.5			15	
		REPAIR							A
0825	ASSEMBLY, OVEN OSCILLATOR 637-9135-001/13499 A29	TEST			0.1			2,7,11	
		REPLACE			0.2			15	
		REPAIR							A
0826	ASSEMBLY, FREQUENCY STANDARD SWITCH 637-6558-001/13499 A30	TEST			0.1			2,11	
		REPLACE			0.2			15	
		REPAIR							A
09	CONTROL MONITOR C-11070/TSC-60(V) 622-6016-001/13499 A1A3A5	INSPECT		0.1					W,D
		TEST		0.1					G
		REPAIR			0.4			1,2,3, 4,15, 20,21,22	E,G
0901	SUBASSEMBLY, CHASSIS 649-7108-001/13499 A1	REPAIR			0.6			1,15	E
0902	ASSEMBLY, FREQUENCY DISPLAY 649-7103-001/13499 A2	REPLACE			0.3			3,15	
		REPAIR							A
0903	MICROPROCESSOR PCB 649-7111-001/13499 A3	REPLACE			0.1			3,15	
		REPAIR							A

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
0904	OUTPUT EXPANSION PCB 649-7109-001/13499 A4	REPLACE			0.1			3,15	
		REPAIR							A
0905	INPUT EXPANSION PCB 649-7110-001/13499 A5	REPLACE			0.1			3,15	
		REPAIR							A
0906	AUDIO CONTROL PCB 649-4131-001/13499 A6	REPLACE			0.1			3,15	
		REPAIR							A
0907	ASSEMBLY, POWER SUPPLY 126-5057-003/13499 PS1	REPLACE			0.3			15	
		REPAIR							A
10	FILTER BANDPASS F-1531/TSC-60(V) 622-3386-001/13499 A1A3A7/A1A3A9	INSPECT		0.1					V
		TEST		0.1					C,G,D
		ADJUST			0.2			5,10, 11,12, 13,14 15	E
		REPAIR			0.4			1,2,3, 4,5,11, 14,15, 20,21,22	E
1001	ASSEMBLY, CHASSIS 637-4700-001/13499 A1	REPAIR			0.5			1,15	E
100101	ASSEMBLY, SIDEBOARD 637-2853-001/13499 A1A2	REPLACE			0.4			15	
		REPAIR							A
1002	PARALLEL INTERFACE PCB 637-2850-001/13499 A2	REPLACE			0.2			3,15	
		REPAIR							A
1003	DIGITAL TO ANALOG CONVERTER PCB 637-2851-001/13499 A3	REPLACE			0.2			3,15	
		REPAIR							A
1004	TUNE LOGIC PCB 637-2849-001/13499 A4	REPLACE			0.2			3,15	
		REPAIR							A
1005	SERVO AMPLIFIER PCB 637-2829-001/13499 A5	REPLACE			0.2			3,15	
		REPAIR							A
1006	RF AMPLIFIER PCB 637-2852-001/13499 A6	REPLACE			0.2			3,15	
		REPAIR							A

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
1007	ASSEMBLY, RELAY MODULE 637-4697-001/13499 A7	REPLACE			0.2			15	
		REPAIR							A
1008	ASSEMBLY, FILTER, 3 POLE 637-4724-001/13499 A8	REPLACE			0.2			15	
		REPAIR							A
11	AMPLIFIER, RF POWER 1 KW HF 8023 622-3490-001/13499 A1A4A3	INSPECT		0.1					D,R
		TEST		0.2					C,G
		ADJUST			0.2			2,5,10, 16,17, 18,19	G
		REPAIR			0.4			15	G,E,A
1101	ASSEMBLY, CHASSIS 646-6433-001/13499 A1	REPAIR			0.5			1,15, 16,17, 18,19	E
110101	ASSEMBLY, DIRECTIONAL COUPLER 642-2634-001/13499 A1A1	ADJUST			0.3			15,16,17, 18,19	
		REPLACE			0.3			15	
		REPAIR							A
110102	BACKPLANE, CARD CAGE PCB 642-3588-001/13499 A1A2	REPLACE			0.5			15	
		REPAIR							A
110103	ASSEMBLY, RF BACKPLANE 646-6435-001/13499 A1A3	REPAIR			0.5			1,15	E
110104	FRONT PANEL PCB 642-3586-001/13499 A1A4	ADJUST			0.3			2	
		REPLACE			0.2			3,15	
		REPAIR							A
1102	ASSEMBLY, DRIVER MODULE 646-6407-001/13499 A2	ADJUST			0.1			2	
		REPLACE			0.2			15	
		REPAIR							A
1103	ASSEMBLY, POWER AMPLIFIER 646-6406-001/13499 A3/A4/A5/A6	ADJUST			0.1			2	
		REPLACE			0.2			15	
		REPAIR							A
1104	ASSEMBLY, POWER COMBINER 645-7120-001/13499 A7	REPLACE			0.4			15	
		REPAIR							A
1105	ASSEMBLY, LOW PASS FILTER 646-6400-001/13499 A8	REPLACE			0.6			15	
		REPAIR							A
1106	DIGITAL CONTROL PCB 642-3592-001/13499 A9	REPLACE			0.2			3,15	
		REPAIR							A

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
1107	ANALOG CONTROL PCB 642-3593-001/13499 A10	REPLACE REPAIR			0.2			3,15	A
1108	HF-80 INTERFACE PCB 635-0745-001/13499 A11	REPLACE REPAIR			0.2			3,15	A
1109	ASSEMBLY, COAX JUMPER MODULE 646-6430-001/13499 A13	REPAIR			0.4			15	E
12	POWER SUPPLY, 1 KW PA HF 8032 622-3512-002/13499 A1A4A1	INSPECT		0.1					D,S
		TEST		0.2					C,G
		REPAIR			0.4			2,3,4,15, 20,21,22	G,E,A
1201	ASSEMBLY, CHASSIS 646-6884-003/13499 A1	REPAIR			0.5			1,3,15	E
1202	ASSEMBLY, 1000 WATT CONVERTER MODULE 646-6883-001/13499 A2/A3	REPLACE REPAIR			0.2			15	A
1203	ASSEMBLY, 500 WATT CONVERTER MODULE 646-6882-001/13499 A4	REPLACE REPAIR			0.2			15	A
1204	ASSEMBLY, LOW VOLTAGE MODULE 646-6812-001/13499 A5	REPLACE REPAIR			0.2			15	A
1205	DIGITAL VOLTMETER PCB 642-3197-001/13499 A6	REPLACE REPAIR			0.2			3,15	A
1206	CROWBAR LOGIC PCB 642-3579-001/13499 A7	REPLACE REPAIR			0.2			3,15	A
1207	ASSEMBLY, CONVERTER MODULE 651-4140-001/13499 A8	REPLACE REPAIR			0.2			15	A
13	COUPLER, ANTENNA 1 KW HF 8040A 622-3515-001/13499	INSPECT		0.2					D,T
		TEST		0.1					C,G
		REPAIR			0.6			1,2,15	E,G,A
1301	CONTROL PCB 646-5781-001/13499 A1	REPLACE REPAIR			0.4			3,15	A

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
1302	ASSEMBLY, COIL MODULE 651-4240-001/13499 A2	REPLACE			0.5			15	
		REPAIR							A
1303	ASSEMBLY, CAPACITOR MODULE 629-5655-003/13499 A3	REPLACE			0.5			15	
		REPAIR							A
1304	ASSEMBLY, DISCRIMINATOR MODULE 629-5642-001/13499 A4	REPLACE			0.5			15	
		REPAIR							A
1305	ASSEMBLY, POWER SUPPLY MODULE 637-4006-001/13499 A6	REPLACE			0.5			15	
		REPAIR							A
1306	ASSEMBLY, CHASSIS 637-4008-001/13499 A7	REPAIR			0.7			1,15	E
14	ANTENNA, RECEIVE ASSEMBLY 656-9044-001/13499	INSPECT		0.1					U
		TEST		0.1					C,G
		REPLACE		0.2					
		REPAIR			0.3				
15	ANTENNA, TRANSMIT ASSEMBLY 656-8749-001/13499	INSPECT		0.1					U
		TEST		0.1					C,G
		REPLACE		0.3					
		REPAIR			0.3				
16	AIR CONDITIONER F9000H-3/94833								M
17	HEADSET/MICROPHONE 273-0032-010/13499	INSPECT/ REPLACE		0.1					
18	HEADSET, H-216-U NSN 5965-00-892-3353	INSPECT/ REPLACE		0.1					
19	MICROPHONE, SM-3 NSN 5695-00-957-5200	INSPECT/ REPLACE		0.1					
20	TELEGRAPH KEY, J-38 NSN 5805-00-162-6297	INSPECT/ REPLACE		0.1					
21	TELEPHONE, TA-312 NSN 5805-00-543-0012								K
22	TELEPHONE, TA-838 NSN 5805-00-234-8678								L
23	COMMUNICATIONS SECURITY EQUIPMENT, TSEC/KW-7 NSN 5810-00-960-2145 A2A2/A3								J

SECTION II. MAINTENANCE ALLOCATION CHART FOR

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
24	COMMUNICATIONS SECURITY EQUIPMENT, TSEC/KWX-11 NSN 5810-00-936-4067 A2A4								J

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/ NATO STOCK NUMBER	FSCM
1	O,F	MULTIMETER, AN/USM-223	6625-00-999-7465	
2	O,F	DIGITAL MULTIMETER, ME-518	6625-01-031-0708	
3	O,F	WRIST STRAP, STATIC CONTROL, 3M-2064	6625-01-116-2292	
4	O,F	OSCILLOSCOPE, OS-262(P)/U	6625-01-007-9416	
5	O,F	SIGNAL GENERATOR, SG-1112(V)2/U	6625-00-500-6525	28480
6	O,F	ATTENUATOR, RF 6DB, HP 8491A-006	5895-00-230-1827	
7	O,F	FREQUENCY COUNTER, TD-1225(V)1/U	6625-00-498-8946	
8	O,F	TRANSMISSION MEASURING SET, AN/USM-423	6625-01-015-6563	
9	O,F	CARD EXTENDER KIT, ROCKWELL TS 8010		13499
10	O,F	ATTENUATOR, RF COAXIAL 30DB, BIRD 8329-300	5985-00-110-0381	
11	O,F	RF VOLTMETER, BOONTON 92C	6625-01-116-9500	
12	O,F	RF VOLTAGE DIVIDER, 100:1, BOONTON 91-7C	6625-00-070-4932	
13	O,F	"T" ADAPTOR, BOONTON 91-16A	6625-01-121-2318	
14	O,F	RF CABLE ASSEMBLY, CG-2340B/U	6625-00-855-4494	
15	O,F	TOOL KIT, ELECTRONIC TK-101	5180-00-064-5178	
16	O,F	WATTMETER, BIRD 4314	6625-00-267-4073	
17	O,F	WATTMETER ELEMENT, BIRD 2500 H	6625-00-242-8590	
18	O,F	WATTMETER ELEMENT, BIRD 1000H	6625-00-954-2785	
19	O,F	WATTMETER ELEMENT, BIRD 250 H	6625-00-954-2784	
20	O,F	POWER SUPPLY, HP-6216A	6130-00-403-6707	
21	O,F	DUAL TIME BASE GENERATOR, TD-1159/U	6625-00-261-5139	
22	O,F	DUAL-TRACE AMPLIFIER, AM-6785/U	6625-00-361-5318	
INCL 2				

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	REPAIR OF PCB's/MODULES IS PERFORMED BY USAF DEPOT. RETURN TO AIR FORCE.
B	OVERHAUL IS PERFORMED BY USAF DEPOT.
C	OPERATIONAL
D	REPLACES TEST EQUIPMENT, BATTERIES, FUSES, LAMPS AND KNOBS, AND ADJUSTS FRONT PANEL CONTROLS.
E	REPLACE PCB's/MODULES AND HARD WIRED AND/OR CHASSIS MOUNTED PIECE PARTS, AND ADJUSTS PCB/MODULE LEVEL CONTROLS.
F	SEE TM 11-5410-200-20P AND TM 11-5410-200-34P FOR MAINTENANCE ALLOCATION.
G	BUILT-IN-TEST-EQUIPMENT (BITE)
H	SEE DTM 11-5895-796-12-1 AND DTM 11-5895-796-12-3 FOR MAINTENANCE ALLOCATION.
I	SEE TM 11-5815-602-12 FOR MAINTENANCE ALLOCATION.
J	SEE TM 11-5810-221-12P FOR MAINTENANCE ALLOCATION.
K	SEE TM 11-5805-201-12 FOR MAINTENANCE ALLOCATION.
L	SEE TM 11-5805-650-12&P FOR MAINTENANCE ALLOCATION.
M	SEE TM 5-4120-347-14 FOR MAINTENANCE ALLOCATION.
N	SEE AF T.O. 31S1-2TSC60-211 FOR PCB/MODULE LOCATION.
O	SEE AF T.O. 31S1-2TSC60-201 FOR PCB/MODULE LOCATION.
P	SEE TM 11-5895-1185-13-2 FOR MAINTENANCE INSTRUCTIONS.
Q	SEE MPC-1000T RTTY TERMINAL UNIT MANUAL FOR MAINTENANCE INSTRUCTIONS.
R	SEE TM 11-5895-1185-13-1 FOR MAINTENANCE INSTRUCTIONS.
S	SEE TM 11-5895-1185-13-1 FOR MAINTENANCE INSTRUCTIONS.
T	SEE TM 11-5895-1185-13-3 FOR MAINTENANCE INSTRUCTIONS.
U	SEE AF T.O. 31S1-2TSC60-32 FOR MAINTENANCE INSTRUCTIONS.
V	SEE AF T.O. 31S1-2TSC60-271 FOR PCB/MODULE LOCATION.
W	SEE AF T.O. 31S1-2TSC60-181 FOR MAINTENANCE INSTRUCTIONS.

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APPENDIX B

NATIONAL STOCK NUMBER CROSS-REFERENCE INDEX

B-1. SCOPE. This appendix lists the spares and repair parts required for organizational and direct support maintenance of Communications Central AN/TSC-60(V)7. It contains information for requisitioning and issuing spares and repair parts, using the Source, Maintenance, and Recoverability (SMR) Codes.

B-2. EXPLANATION OF COLUMNS. The following paragraphs explain the columns of the National Stock Number (NSN) Cross-reference Index and describe their contents.

a. Part Number. The PART NUMBER column shows the manufacturer's (company, firm, corporation, or government activity) part number. This number identifies the item or range of items for that manufacturer.

NOTE

When a stock-numbered item is requisitioned, the item received may have a different part number than the item it replaces.

b. Federal Supply Code for Manufacturers (FSCM). The FSCM is a 5-digit code that identifies the manufacturer, government agency, or other supplier of the part.

c. Figure Number. The FIG. NO. column contains the number of the illustrated parts breakdown (IPB) illustration that shows the part. The letter F preceeding the figure number indicates the item is listed following the index number shown.

d. Index Number. The INDEX NO. column lists the index number that cross-references the item between the illustration and the parts list in the IPB.

e. National Stock Number. This column contains the NATIONAL STOCK NUMBER (NSN) by which the part is requisitioned.

f. Source, Maintenance, and Recoverability (SMR) Code. The SMR CODE column contains the 5-digit code for requisitioning parts. Interpret the codes as follows:

(1) Source Code. The source code, in the first and second positions of the Uniform SMR Code format, tells how to acquire support items for maintenance, repair, or overhaul of end items. Code definitions are as follows:

CODE	DEFINITION
PA	Item procured and stocked for planned use.
PD	Support item (excluding support equipment) procured with newly issued equipment and stocked only for later initial issues or outfitting. Not subject to automatic replenishment.
MD	Item to be built or made at the depot level.

XD	Support item that is not stocked. When required, these items may be procured through normal supply channels.
XA	Item is not procured or stocked. The requirements for the item will result in the replacement or the next higher assembly.

NOTE

Cannibalization or salvage may be used for any items coded above except those coded XA and aircraft support items (as restricted by AR 700-42).

(2) Maintenance Code. Maintenance codes show the levels of maintenance authorized to use and repair support items. The codes are in the third and fourth positions of the format; their meanings are as follows:

(a) The third position shows the lowest maintenance level authorized to replace or use the item.

CODE	DEFINITION
O	Organizational level
F	Direct support level
D	Depot level

(b) The fourth position shows whether the item can be repaired and identifies the lowest maintenance level that can repair it completely (i.e., that is authorized to perform all maintenance on it).

CODE	DEFINITION
O	Organizational level
F	Direct support level
D	Depot level
Z	No repair authorized

(3) Recoverability Code. The coverability code, in the fifth position of the format, shows what to do with items that are unserviciable. These codes are as follows:

CODE	DEFINITION
Z	Nonrepairable item. Condemn and dispose of this item at the level shown in position 3 of the SMR code.

O Repairable item. When repair is not economical, condemn and dispose of the item at the organizational level.

F Repairable item. When repair is not economical, condemn and dispose of the item at the direct support level.

(4) -GFE- in the SMR Code column indicates the item is Government Furnished Equipment.

B-3. HOW TO FIND THE NATIONAL STOCK NUMBER. This paragraph contains the procedure for finding the NSN of any item listed in a USAF Illustrated Parts Breakdown (IPB).

a. Find the illustration of the item in the IPB.

b. Identify the item on the illustration, and note the figure and index numbers.

c. Use the figure and index numbers to find the item in the related parts list. Note the part number.

d. In the Appendix B table of contents, find the functional group to which the item belongs. Note its page location.

e. Turn to that page in the NSN Cross Reference Index and search the PART NUMBER column for the item part number. Find the corresponding NSN.

B-4 SPECIAL INFORMATION. The following publications pertain to AN/TSC-60(V)7 Communications Central and its components.

PUBLICATION NO.	ABBREVIATED TITLE
DTM 11-5815-602-20P	Teleprinter, AN/UGC-74A(V)3
DTM 11-5815-602-34P	Teleprinter, AN/UGC-74A(V)3
TM 5-4120-347-34P	Air Conditioner
TM 11-5410-200-20P	Shelter, Electrical Equipment S-250()/G
TM 11-5410-200-34P	Shelter, Electrical Equipment S-250()/G
TM 11-5805-201-12P	Telephone Set, TA-312
TM 11-5805-650-12P	Telephone Set, TA-838
TM 11-5810-221-12P	Communications Security Equipment, TSEC/KW-7 & TSEC/KWX-11
TM 11-5895-1185-13-1	Amplifier, AM-7163/TSC-60(V) Power Supply, PP-7830/TSC-60(V)
TM-11-5895-1185-13-2	HF VFT System, Model 1290

PUBLICATION NO.	ABBREVIATED TITLE
TM 11-5895-1185-13-3	Coupler, (U-229U/TSC-60(V)
T.O. 3151-2TSC60-181	Control Monitor, (11070/TSC-60(V)
T.O. 3151-2TSC60-201	Receiver, R-2222/TSC-60(V)
T.O. 3151-2TSC60-211	Transmitter, T-1453/TSC-60(V)
T.O. 3151-2TSC60-271	Filter, F-1531/TSC-60(V)
T.O. 31W2-2T-102	Converter, (V-2543(P)K Keyer, KY-664(P)/T

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
GROUP 00	COMMUNICATIONS CENTRAL AN/TSC-60(V)7 (See TM 11-5895-1185-13)				
AD66AH	07707	F1	11	5320-00-882-8386	PAFZZ
AN/UGC-74(V)3	80058	1	110	5815-01-062-8194	PDODD
BS1037BLK	61864	1	37	5325-00-842-1879	PAFZZ
CL-4-BCP-T-2.0	99682	1	48	5935-00-804-5267	PAFZZ
DA20964	71468	2	12	5935-00-804-5267	PAFZZ
DDM50S	71468	2	3	5935-00-716-6498	PAFZZ
DD50PC37	71468	2	11	5935-00-493-0466	PAFZZ
D20420-15	71468	F2	11	5935-00-225-9551	PAFZZ
D5227-2	15230	1	97	-	PAFDD
D5307	15230	2	13	-	ADDDD
D5379	15230	1	104	5805-01-105-9990	PAFDD
FPN10-32SCL	83324	3	8	5310-00-371-5491	PAFZZ
FPN6-32SCL	83324	1	89	5310-00-799-4847	PAFZZ
F9000H-3	94833	1	10	-	PAFZZ
H-216/U	80058	1	153	5965-00-892-3353	PDODD
HP176-9J	82204	1	63	5340-00-304-9552	XBDDD
H10-30	71483	1	160	-	PAFZZ
J-38	80058	1	154	5805-00-162-6297	PDODD
LE-045D-6SS	84830	1	149	-	PAFZZ
LW1023-1-6-0	83014	1	49	4010-00-090-5402	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MPC-1000T/LCO	49204	1	113	5805-01-105-9587	PAFDL
MODEL-NO.2106-7	32572	1	156	-	PAFZZ
MS122121	96906	5	17	5340-00-290-4481	PAFZZ
MS15795-803	96906	F1	66	5310-00-595-6211	PAFZZ
MS15795-805	96906	F1	21	5310-00-722-5998	PAFZZ
MS15795-807	96906	F1	17	5310-00-880-5978	PAFZZ
MS15795-808	96906	F1	16	5310-00-619-1148	PAFZZ
MS15795-810	96906	F1	49	5310-00-582-5677	PAFZZ
MS15795-812	96906	F1	53	5310-00-625-5756	PAFZZ
MS17830-4C	96906	F1	38	5310-00-241-6604	PAFZZ
MS17830-5C	96906	1	32	5310-00-241-6606	PAFZZ
MS20426AD3-4	96906	5	3	5320-00-117-6938	PAFZZ
MS20426AD3-5	96906	1	27	5320-00-117-6938	PAFZZ
MS20426AD3-6	96906	F3	2	5320-00-584-0672	PAFZZ
MS21044C04	96906	F1	66	5310-00-982-4999	PAFZZ
MS21044C06	96906	F1	33	5310-00-982-6813	PAFZZ
MS21044C3	96906	F1	148	5310-00-208-9255	PAFZZ
MS24679-25	96906	5	6	5310-00-199-7639	PAFZZ
MS25036-114	96906	5	23	5940-00-113-9836	PAFZZ
MS25036-157	96906	5	10	5940-00-143-4777	PAFZZ
MS25281R4	96906	1	24	5340-00-988-3210	PAFZZ
MS25281R5	96906	1	18	5340-00-721-5315	PAFZZ
MS25231R7	96906	2	2	5340-00-954-3134	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS3116F10-6P	96906	1	157	5935-00-762-1504	PAFZZ
MS3116F14-19S	96906	1	167	5935-00-779-8295	PAFZZ
MS3116F16-26P	96906	1	166	5935-00-772-9261	PAFZZ
MS3181-20N	96906	5	27	5935-00-990-5565	PAFZZ
MS3367-1-9	96906	1	68	5975-00-074-2072	PAFZZ
MS3367-4-9	96906	1	106	5975-00-727-5153	PAFZZ
MS35307-333	96906	F5	38	5306-00-817-4989	PAFZZ
MS35338-135	96906	F2	5	5310-00-933-8118	PAFZZ
MS35338-137	96906	F1	17	5310-00-933-8119	PAFZZ
MS35338-138	96906	F1	16	5310-00-933-8120	PAFZZ
MS35338-139	96906	F1	123	5310-00-933-8121	PAFZZ
MS35338-140	96906	F1	53	5310-00-974-6623	PAFZZ
MS35489-14	96906	1	132	5235-00-276-6100	PAFZZ
MS35649-244	96906	F2	5	5310-00-934-9748	PAFZZ
MS35649-284	96906	F1	17	5310-00-934-9759	PAFZZ
MS35650-304	96906	F1	16	5310-00-934-9765	PAFZZ
MS51929-2	96906	1	5	5340-00-057-6956	PAFZZ
MS51957-14	96906	F2	5	5305-00-054-5648	PAFZZ
MS51957-22	96906	F2	9	5305-00-054-5656	PAFZZ
MS51957-26	96906	F1	135	5305-00-054-6650	PAFZZ
MS51957-27	96906	F1	21	5305-00-054-6651	PAFZZ
MS51957-28	96906	F1	33	5305-00-054-6652	PAFZZ
MS51957-3	96906	F1	66	5305-00-054-5637	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS51957-31	96906	F1	86	5305-00-054-6655	PAFZZ
MS51957-42	96906	F1	129	5305-00-054-6667	PAFZZ
MS51957-43	96906	F1	124	5305-00-054-6668	PAFZZ
MS51957-45	96906	F1	111	5305-00-054-6670	PAFZZ
MS51957-46	96906	F1	144	5305-00-054-6671	PAFZZ
MS51957-47	96906	F1	147	5305-00-054-6672	PAFZZ
MS51957-81	96906	F1	128	5305-00-082-6721	PAFZZ
MS51957-83	96906	F5	16	5305-00-071-1318	PAFZZ
MS51958-61	96906	F5	26	5305-00-059-3657	PAFZZ
MS51958-62	96906	F1	96	5305-00-059-3658	PAFZZ
MS51958-63	96906	F3	1	5305-00-059-3659	PAFZZ
MS51958-64	96906	F1	18	5305-00-059-3660	PAFZZ
MS51958-65	96906	F5	11	5305-00-059-3661	PAFZZ
MS51958-66	96906	F1	33	5305-00-059-3662	PAFZZ
MS51958-75	96906	F1	148	5305-00-059-3671	PAFZZ
MS51958-81	96906	F1	123	5305-00-059-3677	PAFZZ
MS51959-30	96906	F1	37	5305-00-719-5064	PAFZZ
MS51959-43	96906	F1	124	5305-00-765-4257	PAFZZ
MS51959-46	96906	F1	17	5305-00-764-0070	PAFZZ
MS51960-64	96906	F1	16	5305-00-071-1321	PAFZZ
MS51960-65	96906	F5	35	5305-00-071-1322	PAFZZ
MS77068-1	96906	2	5	5940-00-682-2477	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS90725-33	96906	F1	53	5306-00-225-8498	PAFZZ
MS90725-6	96906	F1	38	5305-00-004-9121	PAFZZ
MS90726-16	96906	F1	49	5305-00-267-8960	PAFZZ
M23503/5-109-0	81349	1	87	5970-00-914-3118	PAFZZ
M24308/26-1	81349	F2	3	5935-01-052-9436	PAFZZ
M39012-01-0005	81349	1	65	5935-00-928-3127	PAFZZ
M39012-02-0003	81349	1	74	5935-00-938-1061	PAFZZ
M39012-25-0011	81349	1	73	5935-00-113-0352	PAFZZ
M45938-4-10	81349	5	33	5310-00-947-4348	PAFZZ
M45938-4-6	81349	5	21	5310-01-044-6568	PAFZZ
NAS1068A3	80205	5	4	5310-00-582-9308	PAFZZ
NAS1330S3B166	80205	5	39	5310-00-881-1616	PAFZZ
NAS1330S3B266	80205	5	12	5310-00-042-6540	PAFZZ
NAS517-4-25	80205	F1	51	5305-00-637-7924	PAFZZ
NCN10-1-4	07886	1	22	5310-00-447-6065	PAFZZ
NCN6-1-2	07886	1	136	5310-00-570-9160	PAFZZ
PJ-71	70674	1	161	-	PAOZZ
P312-0073-000	77250	5	11	-	PAFZZ
P313-0082-000	77250	5	7	5310-00-493-1732	PAFZZ
QQB575R30T656	81348	1	42	6145-00-194-9842	PAFZZ
RCR07G222KS	81349	2	6	5905-00-105-7764	PAFZZ
RF-02153A	94375	1	64	5935-00-355-6344	PAFZZ
SL439-433WHT	12615	2	8	5940-00-935-3379	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
SM-3	80058	1	152	5695-00-957-5200	PDODD
TA-312	80058	1	19	5805-00-543-0012	PDODD
TA-838	80058	1	20	5805-00-543-0012	PDODD
TSEC/KW-7	80058	1	122	5810-00-960-2145	PDODD
TSEC/KWX-11	80058	1	123	5810-00-936-4067	PDODD
TY10CL1-2 1-2LB	81348	1	143	-	PAFZZ
X2-10128BLK	61864	1	34	5325-00-359-6844	PAFZZ
1N3STL	76786	1	3	5340-00-406-3681	PAFZZ
1N752A	12954	2	7	5961-00-995-2310	PAFZZ
116	09729	1	142	-	PAFZZ
126-5185-001	13499	1	75	-	PAFZZ
126-5215-001	13499	1	173	-	XAFZZ
126-5215-002	13499	1	178	-	XAFZZ
126-5216-001	82851	1	33	-	XBFZZ
152-0077-020	85480	1	165	-	XBFZZ
16-10-201-11	94222	3	3	5325-00-225-1420	PAFZZ
2385-2-18	71279	3	1	-	PAFZZ
280-1368-360	12998	5	1	-	XBFZZ
334-1115-000	45722	5	14	5310-00-208-4968	PAFZZ
35-25-0013-00	23657	5	16	5920-00-944-2885	PAFZZ
4-15189-7120	70674	1	162	-	PAOZZ
4-15189-7140	70674	1	164	-	PAOZZ
4-15346-7620	70674	1	163	-	PAOZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
439-0694-010	13499	1	168	-	PAFZZ
541-5995-002	13499	2	10	-	PAFZZ
622-3386-001	13499	1	118	5895-01-112-2194	PAFDD
622-3473-005	13499	1	107	-	PAFDD
622-3475-006	13499	1	115	5820-01-128-7754	PAODD
622-3490-002	13499	1	112	-	PAODD
622-3512-002	13499	1	111	-	PAODD
622-3515-001	13499	5	37	-	PAFDD
622-6016-001	13499	1	117	5820-01-129-1934	ADDDD
649-7147-001	13499	1	-	5805-01-129-1827	XBFZZ
656	45092	1	155	-	PAFZZ
656-3401-001	13499	1	169	-	XAFZZ
656-3401-002	13499	1	170	-	XAFZZ
656-3401-003	13499	1	171	-	XAFZZ
656-3401-004	13499	1	174	-	XAFZZ
656-3401-005	13499	1	175	-	XAFZZ
656-3401-006	13499	1	176	-	XAFZZ
656-3401-007	13499	1	67	-	XBFZZ
656-3401-008	13499	1	69	-	XBFZZ
656-3401-009	13499	1	71	-	XBFZZ
656-3401-010	13499	1	79	-	XBFZZ
656-3401-011	13499	1	81	-	XBFZZ
656-3401-012	13499	1	83	-	XBFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-3407-001	13499	F1	31	-	XBFZZ
656-3408-001	13499	F1	124	-	PAFZZ
656-3410-001	13499	F1	33	-	XBDZZ
656-3415-001	13499	1	131	-	XBFZZ
656-3420-001	13499	F1	156	-	AFFFF
656-3420-002	13499	1	158	-	PAFZZ
656-6888-001	13499	1	31	-	ADDDD
656-6900-001	13499	1	179	-	ADDDD
656-6926-001	13499	1	120	-	XBFZZ
656-6948-001	13499	3	6	-	XBFZZ
656-6948-002	13499	3	5	-	XBFZZ
656-6948-003	13499	3	4	-	XBFZZ
656-6948-004	13499	3	7	-	XBFZZ
656-6951-001	13499	3	2	-	XBFZZ
656-6952-001	13499	F3	7	-	XBFZZ
656-6952-002	13499	3	9	-	XBFZZ
656-6953-001	13499	1	96	-	ADDDD
656-6961-001	13499	1	66	-	XBDDD
656-7094-001	13499	F1	164	-	PAOFF
656-7171-001	13499	1	145	-	XBDDD
656-7172-001	13499	1	144	-	XBDDD
656-7193-001	13499	F1	63	-	PAOZZ
656-7194-001	13499	F1	75	-	PAOZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-8688-001	13499	F5	16	-	XBDDD
656-8688-002	13499	5	18	-	XBDDD
656-8690-001	13499	F5	11	-	XBDDD
656-8703-001	13499	2	9	-	XBDDD
656-8704-001	13499	1	86	-	ADDDD
656-8705-001	13499	F5	20	-	XBFZZ
656-8718-001	13499	5	29	-	XBDDD
656-8722-001	13499	5	38	-	XBDDD
656-8722-002	13499	F5	38	-	XBDDD
656-8725-001	13499	1	134	-	MDDDD
656-8726-001	13499	1	135	-	MDDDD
656-8729-001	13499	5	25	-	MDDZZ
656-8730-001	13499	5	24	-	MDDZZ
656-8732-001	13499	1	150	-	XBDDD
656-8741-001	13499	F1	53	-	XBFZZ
656-8743-001	13499	F1	51	-	XBFZZ
656-8744-001	13499	F1	58	-	XB---
656-8746-001	13499	1	133	-	XBDDD
656-8747-001	13499	1	128	-	XBDDD
656-8749-001	13499	1	1	-	ADD--
656-8752-001	13499	1	124	-	PAFZZ
656-9041-001	13499	1	11	-	XBFZZ
656-9042-001	13499	1	16	-	XBFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-9043-001	13499	F1	11	-	XBFZZ
656-9044-001	13499	1	2	-	ADD--
656-9048-001	13499	1	138	-	PAFZZ
656-9049-001	13499	F1	135	-	XBFZZ
656-9055-001	13499	1	148	-	XBFZZ
656-9056-001	13499	1	147	-	XBFZZ
656-9066-001	13499	F1	86	-	XBFZZ
656-9067-001	13499	F1	88	-	XBFZZ
656-9067-002	13499	F1	90	-	XBFZZ
656-9068-001	13499	F1	138	-	PAOZZ
656-9069-001	13499	F1	6	-	PAOZZ
656-9070-001	13499	F1	2	-	PAOZZ
656-9071-001	13499	F1	4	-	PAOZZ
656-9072-001	13499	F1	20	-	XBFZZ
656-9073-001	13499	1	105	-	XBFZZ
656-9076-001	13499	1	151	-	PAFZZ
656-9079-001	13499	F1	168	-	PAOZZ
656-9080-001	13499	F1	173	-	PAOZZ
662R1-1X1-4CDPL	76786	1	17	5340-01-049-0905	PAFZZ
785-5622-097	13499	1	116	-	MDDZZ
785-5622-099	13499	1	114	-	MDDZZ
90416001-006	96238	1	93	5805-00-204-2811	PAFDD
90416002-006	96238	1	94	-	PAFDD

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
9425	74547	1	130	-	PAFZZ
GROUP 01	SHELTER, WIRED (See TM 11-5895-1185-13)				
AD42H	07707	F9	18	5320-01-033-4375	PAFZZ
AD43H	07707	F8	55	5320-00-882-8388	PAFZZ
AD44H	07707	F7	1	5320-00-882-8396	PAFZZ
AD66AH	07707	F1	11	5320-00-433-9920	PAFZZ
AHWX092-003219	85005	F12	33	-	PAFZZ
AN104612	88044	F6	29	5306-00-206-6539	PAFZZ
AN3-16A	88044	F17	1	5306-00-151-0778	PAFZZ
AN3167-1	88044	6	109	5930-00-243-2381	PAFZZ
AN3195-11	88044	6	178	-	PAFZZ
AN3195-21	88044	6	179	-	PAFZZ
AN960C10L	88044	F17	1	5310-00-167-0812	PAFZZ
AN960C516L	88044	F17	5	5310-00-167-0814	PAFZZ
AN961-416T	88044	7	11	5310-00-177-1156	PAFZZ
APL1-531-350	81541	7	6	5925-00-035-4126	PAFZZ
A1A1	25088	8	7	5920-00-482-0896	PAFZZ
A1A230	25088	8	6	5920-00-977-7363	PAFZZ
A10-166	03481	6	192	5320-01-109-0330	PAFZZ
B-200-18	06666	6	61	-	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
BS10370BLK	61864	6	117	5325-00-842-1879	PAFZZ
CA-4017-4	29372	10	83	-	XBFZZ
CL-26-EB	99862	10	73	5306-00-483-2562	PAFZZ
CL-70-BLP-T-20	99862	6	147	-	PAFZZ
CRS25	05236	18	11	5840-00-982-4465	PAFZZ
CR2162T8-3	11815	F6	191	-	XBF--
CR2163T6-4	11815	F6	2	-	XBF--
CR30-660	84411	12	21	5910-01-013-8313	PAFZZ
DA20963	71468	6	195	5935-00-716-6578	PAFZZ
DA20964	71468	12	12	5935-00-804-5267	PAFZZ
DBM-25P	71468	14	16	5935-00-259-4690	PAFZZ
DBM25S	71468	15	6	5935-00-351-6135	PAFZZ
DB20962	71468	14	15	5935-00-615-7692	PAFZZ
DCC37SFO	71468	12	153	5935-01-027-8149	PAFZZ
DCM-37P	71468	6	196	5935-00-088-5587	PAFZZ
DCM-37S	71468	6	197	-	PAFZZ
DCM-27S	71468	8	34	-	PAFZZ
DC20963	71468	13	12	5935-00-716-6578	PAFZZ
DDC50SFC	71468	12	156	5935-00-453-5041	PAFZZ
DDM50S	71468	8	35	5935-00-716-6488	PAFZZ
DD50PC37	71468	12	147	5935-00-493-0466	PAFZZ
DEMF9S	71468	9	52	5935-00-820-9500	PAFZZ
D20419-18	71468	12	150	5935-00-246-2575	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
D20419-21	71468	6	194	5305-00-855-7965	PAFZZ
D20420-13	71468	12	154	5935-00-485-8796	PAFZZ
D20420-15	71468	12	145	5935-00-225-9551	PAFZZ
EC22U0-4-5SF	81349	10	128	6145-01-081-8580	PAFZZ
EC2209-0SF	81349	10	139	6145-00-916-9561	PAFZZ
FHL17G1	81349	11	10	5920-00-089-4130	PAFZZ
FHS1032-10	46384	11	15	5307-00-974-0610	PAFZZ
FHS1032-12	46384	8	65	5307-00-956-9474	PAFZZ
FHS1032-8	46384	17	23	5307-00-075-2206	PAFZZ
FHS1032-10	46384	6	39	5307-00-987-9768	PAFZZ
FH22HM	81349	10	32	5920-00-532-2635	PAFZZ
FPN10-32SCL	83324	6	25	5310-00-271-5491	PAFZZ
FPN4-40SCL	83325	10	11	5310-00-600-6647	PAFZZ
FPN6-32SCL	83324	6	51	5310-00-799-4847	PAFZZ
F02A250V1-4AS	81349	10	30	5920-00-380-5031	PAFZZ
F02A250V3AS	81349	11	9	5920-00-877-9934	PAFZZ
F02A250V5AS	81349	10	31	5920-00-060-2424	PAFZZ
H2411-2AL	17244	6	82	-	PAFZZ
H38-0.064-0.251	83014	18	1	-	PAFZZ
JJ022	81349	16	13	5935-00-192-4825	PAFZZ
JN17-4327A	56289	8	22	5915-00-879-1069	PAFZZ
JT01RE-12-98PSR	77820	12	55	-	PAFZZ
JT01RE-14-35SBSR	77820	12	134	-	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
JW17-4435A	56289	8	22	-	PAFZZ
JW33-1085B	56289	8	20	5915-00-479-7438	PAFZZ
KN-19-159	91836	12	125	5935-00-988-5506	PAFZZ
LCDA11	80103	10	17	6130-00-006-7852	PAFDD
LC051G7SS	84830	F6	148	-	PAFZZ
LW1023-1-6-0	83014	16	7	4010-00-090-5402	PAFZZ
MS15795-802	96906	F9	52	5310-00-595-6761	PAFZZ
MS15795-803	96906	6	58	5310-00-595-6211	PAFZZ
MS15795-805	96906	F6	28	5310-00-772-5998	PAFZZ
MS15795-807	96906	F6	5	5310-00-880-5978	PAFZZ
MS15795-808	96906	F6	1	5310-00-619-1148	PAFZZ
MS15795-810	96906	F6	69	5310-00-582-5677	PAFZZ
MS15795-812	96906	F6	27A	5310-00-625-5756	PAFZZ
MS15795-814	96906	F9	65	5310-00-773-7618	PAFZZ
MS16535-154	96906	F9	5	5320-00-879-6606	PAFZZ
MS16562-223	96906	10	90	5315-00-817-0889	PAFZZ
MS16562-229	96906	10	65	5315-00-058-9763	PAFZZ
MS16632-1025	96906	6	169	5365-00-720-8064	PAFZZ
MS16997-61	96906	10	80	5305-00-978-9380	PAFZZ
MS16998-45	96906	F6	105	5305-00-983-6662	PAFZZ
MS17830-4C	96906	7	14	5310-00-241-6604	PAFZZ
MS17830-5C	96906	F17	5	5310-00-241-6606	PAFZZ
MS17830-6C	96906	F6	148	5310-00-050-6646	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS20257-5-7200	96906	9	2	5340-00-813-8486	PAFZZ
MS20257H5-7200	96906	9	3	5340-00-663-3910	PAFZZ
MS20426AD3-4	96906	F17	6	5320-00-117-6938	PAFZZ
MS20426AD3-5	96906	F6	17	5320-00-117-6939	PAFZZ
MS20426AD3-6	96906	F8	47	5320-00-584-0672	PAFZZ
MS20426AD4-4	96906	F6	51	5320-00-117-6949	PAFZZ
MS20426AD4-6	96906	6	40	5320-00-117-6951	PAFZZ
MS20426AD5-8	96906	F6	40	5320-00-117-6885	PAFZZ
MS20470AD3-4	96906	F6	37	5320-00-117-6815	PAFZZ
MS20470AD3-5	96906	F9	23	5320-00-117-6816	PAFZZ
MS20470AD3-6	96906	F8	45	5320-00-117-6817	PAFZZ
MS20470AD4-4	96906	16	21	5320-00-117-6826	PAFZZ
MS20470AD4-5	96906	F9	1	5320-00-754-0822	PAFZZ
MS20470AD4-7	96906	10	76	5320-00-117-6829	PAFZZ
MS21044C04	96906	6	59	5310-00-982-4999	PAFZZ
MS21044C06	96906	F6	36	5310-00-982-6813	PAFZZ
MS21044C08	96906	F6	35	5310-00-982-6814	PAFZZ
MS21044C3	96906	F8	44	5310-00-208-9255	PAFZZ
MS21044C5	96906	F6	116	5310-00-889-2589	PAFZZ
MS21075L06	96906	8	45	5310-00-781-9493	PAFZZ
MS21266-1N	96906	6	123	5325-00-960-2410	PAFZZ
MS21266-2N	96906	6	23	5325-00-074-3301	PAFZZ
MS21266-3N	96906	6	46	5325-00-926-1394	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS21326-1	96906	6	185	5325-00-202-1612	PAFZZ
MS28332-41	96906	6	177	5310-00-052-0326	PAFZZ
MS24510A10	96906	11	13	5925-00-835-4431	PAFZZ
MS24510A5	96906	11	12	5925-00-837-7944	PAFZZ
MS24628-24	96906	F6	181	5305-00-052-7479	PAFZZ
MS24679-25	96906	F9	61	5310-00-199-7639	PAFZZ
MS24680-25	96906	F6	140	5310-00-916-9480	PAFZZ
MS24693S122	96906	F6	165	5305-00-067-9850	PAFZZ
MS25036-101	96906	9	51	5940-00-813-0698	PAFZZ
MS25036-106	96906	10	103	5940-00-283-5280	PAFZZ
MS25036-111	96906	12	103	5940-00-204-8990	PAFZZ
MS25036-112	96906	6	131	5940-00-143-4794	PAFZZ
MS25036-120	96906	10	36	5940-00-557-4344	PAFZZ
MS25036-149	96906	12	12	5940-00-557-1629	PAFZZ
MS25036-157	96906	6	126	5940-00-143-4777	PAFZZ
MS25281R10	96906	12	20	5340-00-989-3032	PAFZZ
MS25281R12	96906	10	43	5340-00-088-7768	PAFZZ
MS25281R13	96906	10	26A	5340-00-820-1789	PAFZZ
MS25281R2	96906	9	54	5340-00-753-3456	PAFZZ
MS25281R5	96906	10	42	5340-00-721-5315	PAFZZ
MS25281R7	96906	10	44	5340-00-954-3134	PAFZZ
MS25281R8	96906	6	122	5340-00-543-3934	PAFZZ
MS25281R9	96906	6	22	5340-00-530-6833	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS27212-1-9	96906	10	9	5940-00-028-7995	PAFZZ
MS27484T12F98S	96906	12	61	5935-01-066-0830	PAFZZ
MS27484T14F35PB	96906	12	141	5935-01-056-6267	PAFZZ
MS27484T16F6S	96906	6	134	5935-01-063-9127	PAFZZ
MS27506F12-2	96906	12	60	5935-00-558-8135	PAFZZ
MS27506F16-2	96906	6	133	5935-00-557-3740	PAFZZ
MS27508E16F6P	96906	6	128	5935-01-064-9210	PAFZZ
MS27735-23	96906	9	43	5930-00-540-8311	PAFZZ
MS3057-6A	96906	12	65	5935-00-280-2195	PAFZZ
MS3106A14S7S	96906	12	66	5935-00-274-7295	PAFZZ
MS3106E14S-2SX	96906	10	148	5935-01-113-5697	PAFZZ
MS3106E14S2P	96906	10	144	5935-01-076-6397	PAFZZ
MS3106E14S2PY	96906	10	113	5935-00-687-0610	PAFZZ
MS3106E14S7P	96906	10	138	5935-00-201-6655	PAFZZ
MS3106F10SL3S	96906	12	88	5935-00-231-3180	PAFZZ
MS3106R18-11S	96906	6	127	5935-00-725-4153	PAFZZ
MS3110E14-19P	96906	10	166	5935-00-062-1213	PAFZZ
MS3112E12-3P	96906	15	8	5935-00-995-5782	PAFZZ
MS3112E14-19S	96906	16	19	5935-00-415-5400	PAFZZ
MS3112E16-26S	96906	14	5	5935-00-827-1545	PAFZZ
MS3115-14A	96906	16	4	5935-00-947-1036	PAFZZ
MS3116F12-3S	96906	12	70	5935-00-901-8871	PAFZZ
MS3116F14-12S	96906	12	56	5935-00-880-9932	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS3116F14-19P	96906	10	170	5935-00-779-8294	PAFZZ
MS3116F14-19S	96906	12	142	5935-00-779-8295	PAFZZ
MS3116F16-26P	96906	12	133	5935-00-772-9261	PAFZZ
MS3116F22-55S	96906	14	57	5935-00-892-9332	PAFZZ
MS3116F8-4S	96906	10	127	5935-00-892-9332	PAFZZ
MS3181-20C	96906	8	62	5935-00-762-1392	PAFZZ
MS3367-1-0	96906	13	22	5975-00-984-6582	PAFZZ
MS3367-4-0	96906	14	36	5975-00-903-2284	PAFZZ
MS35307-315	96906	F19	7	5305-00-655-6974	PAFZZ
MS35307-334	96906	F6	99	5306-00-543-4405	PAFZZ
MS35307-335	96906	F6	36	5306-00-720-8260	PAFZZ
MS35307-336	96906	F6	27A	5306-00-637-9674	PAFZZ
MS35307-337	96906	F6	70	5306-00-576-0529	PAFZZ
MS35338-101	96906	12	178	5310-00-184-8970	PAFZZ
MS35338-134	96906	F9	52	5310-00-928-2690	PAFZZ
MS35338-135	96906	F6	136	5310-00-933-8118	PAFZZ
MS35338-136	96906	F6	28	5310-00-929-6395	PAFZZ
MS35338-137	96906	F6	143	5310-00-933-8119	PAFZZ
MS35338-138	96906	F6	1	5310-00-933-8120	PAFZZ
MS35338-139	96906	F6	105	5310-00-933-8121	PAFZZ
MS35338-140	96906	F6	27A	5310-00-974-6623	PAFZZ
MS35338-141	96906	F9	65	5310-00-984-7042	PAFZZ
MS35489-19	96906	8	36	5325-00-276-6091	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS35489-35	96906	10	4	5325-00-185-0012	PAFZZ
MS35489-48	96906	6	76	5325-00-174-9332	PAFZZ
MS35649-224	96906	F9	52	5310-00-938-2013	PAFZZ
MS35649-244	96906	F6	136	5310-00-934-9748	PAFZZ
MS35649-264	96906	9	-	5310-00-934-9761	PAFZZ
MS35650-304	96906	F6	61	5310-00-934-9765	PAFZZ
MS51957-15	96906	F6	66	5305-00-054-5649	PAFZZ
MS51957-16	96906	F10	25	5305-00-054-5650	PAFZZ
MS51957-17	96906	F8	63	5305-00-054-5651	PAFZZ
MS51957-18	96906	F7	3	5305-00-054-5652	PAFZZ
MS51957-19	96906	F8	7	5305-00-054-5653	PAFZZ
MS51957-25	96906	F8	7	5305-00-054-6649	PAFZZ
MS51957-26	96906	F9	50	5305-00-054-6650	PAFZZ
MS51957-27	96906	F6	28	5305-00-054-6651	PAFZZ
MS51957-28	96906	F6	48	5305-00-054-6652	PAFZZ
MS51957-29	96906	8	41	5305-00-054-6653	PAFZZ
MS51957-30	96906	F7	6	5305-00-054-6654	PAFZZ
MS51957-31	96906	8	43	5305-00-054-6655	PAFZZ
MS51957-32	96906	9	-	5305-00-054-6656	PAFZZ
MS51957-33	96906	F9	18	5305-00-054-6657	PAFZZ
MS51957-34	96906	F9	55	5305-00-054-6658	PAFZZ
MS51957-35	96906	F10	27	5305-00-054-6659	PAFZZ
MS51957-4	96906	F9	52	5305-00-054-5638	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS51957-40	96906	F10	79	5305-00-054-6665	PAFZZ
MS51957-44	96906	F9	39	5305-00-054-6669	PAFZZ
MS51957-45	96906	F18	10	5305-00-054-6670	PAFZZ
MS51957-46	96906	F6	74	5305-00-054-6671	PAFZZ
MS51957-47	96906	F17	4	5305-00-054-6672	PAFZZ
MS51957-48	96906	F6	143	5305-00-054-6673	PAFZZ
MS51957-50	96906	F6	5	5305-00-054-6675	PAFZZ
MS51957-55	96906	F9	74	5305-00-054-6682	PAFZZ
MS51957-81	96906	F10	14	5305-00-054-6721	PAFZZ
MS51958-60	96906	9	71	5305-00-059-3656	PAFZZ
MS51958-61	96906	F6	36	5305-00-059-3657	PAFZZ
MS51958-62	96906	F6	18	5305-00-059-3658	PAFZZ
MS51958-63	96906	F6	95	5305-00-059-3659	PAFZZ
MS51958-64	96906	F6	4	5305-00-059-3660	PAFZZ
MS51958-65	96906	F6	3	5305-00-059-3661	PAFZZ
MS51958-66	96906	F6	50	5305-00-059-3662	PAFZZ
MS51958-67	96906	F6	1	5305-00-059-3663	PAFZZ
MS51958-81	96906	F6	69	5305-00-059-3677	PAFZZ
MS51959-14	96906	F6	120	5305-00-763-7822	PAFZZ
MS51959-15	96906	6	57	5305-00-770-2579	PAFZZ
MS51959-16	96906	F12	10	5305-00-770-2580	PAFZZ
MS51959-17	96906	F12	1	5305-00-768-0336	PAFZZ
MS51959-26	96906	F6	144	5305-00-763-6961	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS51959-28	96906	F9	21	5305-00-763-6963	PAFZZ
MS51959-29	96906	F6	138	5305-00-727-8832	PAFZZ
MS51959-30	96906	F18	3	5305-00-719-5064	PAFZZ
MS51959-31	96906	F6	155	5305-00-765-4352	PAFZZ
MS51959-40	96906	F6	153	5305-00-723-9405	PAFZZ
MS51959-42	96906	F10	17	5305-00-765-4252	PAFZZ
MS51959-45	96906	F6	15	5305-00-764-0068	PAFZZ
MS51959-79	96906	F18	2	5305-00-701-5228	PAFZZ
MS51959-81	96906	F6	153	5305-00-719-5021	PAFZZ
MS51960-62	96906	F18	11	5305-00-059-5433	PAFZZ
MS51960-64	96906	F10	18	5305-00-071-1321	PAFZZ
MS51960-66	96906	8	44	5305-00-071-1323	PAFZZ
MS51960-67	96906	F6	168	5305-00-071-1324	PAFZZ
MS51960-68	96906	F6	167	5305-00-071-1325	PAFZZ
MS77068-1	96906	8	33	5940-00-682-2499	PAFZZ
MS90725-64	96906	F9	65	5305-00-269-3214	PAFZZ
MS90726-57	96906	F6	34	5305-00-269-3233	PAFZZ
MS90727-18	96906	F19	5	5305-00-267-8962	PAFZZ
MS91528-1K2B	96906	11	6	5355-00-556-0145	PAFZZ
M15733-02-0004	81349	6	85	5915-00-226-6862	PAFZZ
M17-028RG058	81349	9	68	6145-00-542-6092	PAFZZ
M24308/26-1	81349	6	57	5935-01-052-9436	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
M39012-01-0005	81349	12	120	5935-00-928-3127	PAFZZ
M39012-06-0002	81349	12	121	5935-00-838-8419	PAFZZ
M39012-16-0101	81349	9	67	5935-01-043-0629	PAFZZ
M39012-22-0001	81349	9	69	5935-00-838-8470	PAFZZ
M39012-25-0011	81349	6	66	5935-00-901-9770	PAFZZ
M39019-5-255	81349	11	8	-	PAFZZ
M45938-4-5	81349	8	8	5310-00-338-2256	PAFZZ
M45938/5-5	81349	12	28	5310-01-019-3215	PAFZZ
MS423-02-01	81349	9	44	5930-00-539-7013	PAFZZ
MS423-14-05	81349	7	5	5925-00-007-7578	PAFZZ
NAS1068A08	80205	6	16	5310-00-772-3721	PAFZZ
NAS1068A3	80205	8	37	5310-00-582-9308	PAFZZ
NAS1329A08KB120	80205	6	187	-	PAFZZ
NAS620C10L	80205	F12	6	5310-00-781-9483	PAFZZ
NAS620C3	80205	F9	67	5310-00-764-3919	PAFZZ
NAS620C4	80205	F6	129	5310-00-057-0573	PAFZZ
NAS620C4L	80205	F10	9	5310-00-723-9676	PAFZZ
NAS620C416	80205	10	82	5310-00-952-0309	PAFZZ
NAS620C6	80205	F8	25	5310-00-773-7624	PAFZZ
NAS620C8L	80205	6	186	5310-00-880-5975	PAFZZ
NCN6-1-2	07886	F9	58	5310-00-570-9160	PAFZZ
NCN6-1-3	57227	6	145	5340-00-074-9612	PAFZZ
NCN6-1-4	57227	10	75	5310-00-601-7614	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
NCS6-3-16	57227	8	52	5307-00-846-2178	PAFZZ
NW512SJ	04569	6	135	-	PAFZZ
NX6120	70485	9	28	9390-01-008-2524	PAFZZ
PJ838	70674	12	11	5935-00-909-5682	PAFZZ
PL-259A	80058	6	200	5935-00-020-1789	PAFZZ
PT06E10-98PSR	77820	10	154	5935-00-992-0304	PAFZZ
PT06E10-98PWSR	77820	10	160	5935-00-992-0302	PAFZZ
PT06E10-98SSR	77820	10	149	5935-00-051-1809	PAFZZ
PT07A20-39P	77820	8	32	5935-00-267-3001	PAFZZ
P312-0259-000	77250	7	17	-	PAFZZ
P312-0261-000	77250	9	70	-	PAFZZ
P312-0262-000	77250	7	13	5307-00-039-0281	PAFZZ
P313-0045-000	77250	F8	25	5310-00-616-8660	PAFZZ
P313-0082-000	77250	F9	61	5310-00-493-1732	PAFZZ
P313-0132-000	77250	F8	33	5310-00-208-3786	PAFZZ
P313-0148-000	77250	7	10	5310-00-018-4464	PAFZZ
P326-0010-000	77250	F12	39	5305-00-071-2241	PAFZZ
P342-0243-000	77250	F7	8	5305-00-240-0470	PAFZZ
P343-0064-000	77250	F6	50	5305-01-053-0961	PAFZZ
P343-0194-000	77250	F6	5	5305-00-616-2579	PAFZZ
RG213U	80058	6	202	6145-00-660-8711	PAFZZ
RM52CHA227-40	72962	16	22	5310-00-918-9530	PAFZZ
SE26XF03	81349	15	7	5964-00-939-7825	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
SL439-433WHT	12615	12	24	5940-00-935-3379	PAFZZ
SS10B166	03481	12	186	5310-00-929-6398	PAFZZ
S10B116	03481	6	20	5310-00-999-4191	PAFZZ
S31-425	03481	19	4	5310-00-771-2195	PAFZZ
TY37	59730	6	4	5975-00-838-7450	PAFZZ
UG-224/U	91836	8	29	-	PAFZZ
UG160DU	80058	6	201	5935-00-754-5626	PAFZZ
U106U	80058	8	61	5940-00-283-5386	PAFZZ
W-L-101/85	24455	6	33	-	PAFZZ
X-129(BUNA-S)	70485	7	114	-	PAFZZ
YAE10N5	09922	9	21	5940-00-204-8990	PAFZZ
01308-15	81774	10	114	6145-00-635-1187	PAFZZ
015-1913-000	82240	9	1	5340-00-685-5899	PAFZZ
026982	82877	12	18	4140-01-081-1380	PAFZZ
028309	82877	9	74	-	PAFZZ
030-1953-000	50804	12	151	5999-01-113-7443	PAFZZ
07401	00414	9	64	5820-00-944-2885	XBFZZ
070404	23657	F9	61	5985-00-347-0338	PAFZZ
10-101949-20	77820	8	64	5330-00-672-5726	PAFZZ
10-40450-22	77820	7	4	5330-00-641-4336	PAFZZ
100-200-4-6	99378	6	37	5340-00-584-1439	PAFZZ
101-N1100A	94375	12	116	5935-00-908-9423	PAFZZ
110-5	25184	F7	6	5330-00-805-9386	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
110-6	25184	9	-	5330-00-618-9563	PAFZZ
1221	74545	10	40	5930-00-660-5584	PAFZZ
1250-02	23663	10	56	5920-01-056-4538	PAFZZ
126-5081-001	13499	6	35	-	PAFZZ
126-5175-001	65092	12	13	-	PAFZZ
126-5178-001	13499	7	108	-	PAFZZ
126-5183-001	13499	7	18	-	XBFZZ
126-5194-001	83508	10	97	-	PAFZZ
140-0045-000	13499	6	176	5325-00-262-9123	PAFZZ
150-0708-020	13499	10	20	5340-00-543-3931	PAFZZ
150-0708-030	13499	10	8	5340-00-988-3210	PAFZZ
150-0708-060	13499	10	26	5340-00-954-3134	PAFZZ
150-0708-100	13499	10	41	5340-00-964-3664	PAFZZ
157-0077-020	85480	6	130	-	XBFZZ
152-0077-040	85480	6	125	-	XBFZZ
152-0077-060	85480	13	30	-	PAFZZ
205839-3	00779	12	175	5935-01-019-9710	PAFZZ
206138-1	00779	12	106	5935-01-023-4872	PAFZZ
207485-1	00779	12	107	-	PAFZZ
2110-0190CADPL	25184	F8	44	5330-00-641-4432	PAFZZ
259-2753-020	81349	11	7	5930-00-003-5752	PAFZZ
261030	65092	11	5	6625-00-465-6849	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
262-102	83330	10	137	5935-00-964-8734	PAFZZ
262-103	83330	10	136	5935-00-729-3745	PAFZZ
268	51741	10	28	-	PAFZZ
280-1368-010	12998	12	19	7690-01-125-0003	PAFZZ
280-1368-030	12998	12	31	-	PAFZZ
280-1368-060	12998	6	37	7690-01-126-2704	XC---
30FHXX	31356	11	2	6625-00-669-0739	PAFZZ
310-0019-000	79807	F12	20	5310-00-351-4062	PAFZZ
310-0277-000	13499	F9	69	5310-00-685-1970	PAFZZ
33FHXXRUG	31356	11	3	6625-00-553-0223	PAFZZ
330-1748-190	70318	F9	69	5305-00-567-5320	PAFZZ
3302	59730	6	89	5975-00-222-8566	PAFZZ
334-1115-000	45722	7	9	5310-00-208-4968	PAFZZ
34104	05236	18	10	-	PAFZZ
4-24087-4924	70674	13	55	-	PAFZZ
4012HT	77147	9	61A	5940-00-665-5592	PAFZZ
4041	00141	9	38	5305-00-065-3194	PAFZZ
439-0694-010	13499	14	6	-	PAFZZ
476042	82877	12	17	4140-00-227-8228	PAFZZ
5JX94	56289	10	53	5915-00-624-0167	PAFZZ
5L1FF	96881	9	27	3120-00-789-2391	PAFZZ
5252	74545	6	50	5935-00-448-1085	PAFZZ
541-6037-002	13499	9	56	5365-00-275-0701	PAFZZ
547-5305-002	13499	8	25	5940-00-738-1265	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
5705-14	83508	10	79	-	XBFZZ
59-216	57003	6	129	-	PAFZZ
60A19B	08805	6	31	-	PAOZZ
622-3418-001	13499	12	51	-	AFFZZ
622-3493-001	13499	12	50	5895-01-124-8572	AFFZZ
623-9008-001	13499	12	8	-	XBFZZ
623-5201-001	13499	12	10	-	XBFZZ
651-4140-001	13499	9	50	5895-01-132-6151	PAFLD
656-1033-001	13499	6	32	-	PAFZZ
656-3402-001	13499	6	75	-	XBFZZ
656-3419-001	13499	7	8	-	XBDDD
656-6884-001	13499	6	29	-	ADDDZ
656-6887-001	13499	6	3	-	ADDDZ
656-6889-001	13499	6	2	-	ADDDZ
656-6890-001	13499	12	-	-	ADDDZ
656-6891-001	13499	6	69	-	ADDDZ
656-6892-001	13499	18	22	-	ADDDZ
656-6894-001	13499	F6	65	-	MDD--
656-6895-001	13499	F17	5	-	ADDDD
656-6899-001	13499	12	16	-	ADDDZ
656-6901-001	13499	F7	17	-	XBFZZ
656-6903-001	13499	F12	7	-	ADDDD
656-6906-001	13499	8	23	-	XBFZZ

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PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-6907-001	13499	8	4	-	XBFZZ
656-6908-001	13499	8	40	-	XBFZZ
656-6909-001	13499	F8	7	-	XBFZZ
656-6909-002	13499	F8	9	-	XBFZZ
656-6909-003	13499	F8	11	-	XBFZZ
656-6909-004	13499	F8	13	-	XBFZZ
656-6910-001	13499	17	7	-	XBDDD
656-6910-002	13499	17	6	-	XBDDD
656-6911-001	13499	17	17	-	MDFZZ
656-6912-001	13499	17	22	-	MDFZZ
656-6912-002	13499	17	21	-	MDD--
656-6913-001	13499	12	52	-	MDDDD
656-6913-002	13499	12	53	-	MDD--
656-6914-001	13499	17	12	-	XBDDD
656-6914-002	13499	17	11	-	XBDDD
656-6915-001	13499	17	14	-	XBDDD
656-6916-001	13499	17	15	-	XBDDD
656-6917-001	13499	17	8	-	XBDDD
656-6918-001	13499	17	18	-	XBDDD
656-6919-001	13499	6	47	-	XBDDD
656-6920-001	13499	17	10	-	MDD--
656-6922-001	13499	8	2	-	XBFZZ
656-6923-001	13499	F17	22	-	MDFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-6923-002	13499	17	24	-	MDFZZ
656-6924-001	13499	17	9	-	MDFZZ
656-6925-001	13499	17	20	-	XBDDD
656-6927-001	13499	17	16	-	MDFZZ
656-6928-001	13499	18	5	-	PAFZZ
656-6930-001	13499	18	7	-	MDFZZ
656-6931-001	13499	18	8	-	MDFZZ
656-6932-001	13499	18	2	-	MDFZZ
656-6935-001	13499	F8	42	-	XBFZZ
656-6937-001	13499	F8	36	-	XBFZZ
656-6937-002	13499	8	38	-	XBFZZ
656-6940-001	13499	F8	17	-	XBFZZ
656-6941-001	13499	19	11	-	XBDZZ
656-6942-001	13499	19	2	-	XBDZZ
656-6943-001	13499	19	8	-	XBDZZ
656-6944-001	13499	19	7	-	XBDZZ
656-6944-002	13499	19	9	-	XBDZZ
656-6945-001	13499	19	12	-	XBDZZ
656-6945-002	13499	19	13	-	XBDZZ
656-6949-001	13499	19	-	-	ADDDZ
656-6950-001	13499	19	3	-	XBDZZ
656-6955-001	13499	F8	15	-	XBFZZ
656-6957-001	13499	F8	46	-	XBFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-6957-002	13499	F8	48	-	XBFZZ
656-6960-001	13499	12	47	-	MDDZZ
656-6960-002	13499	12	48	-	XBDZZ
656-6968-001	13499	8	39	-	PAFZZ
656-6969-001	13499	9	65	-	MFFZZ
656-6971-001	13499	12	14	-	MDDDZ
656-6974-001	13499	12	9	-	XBFZZ
656-6975-001	13499	F8	51	-	XBFZZ
656-6979-001	13499	12	-	-	PAFZZ
656-6980-001	13499	F8	64	-	XBFZZ
656-6982-001	13499	8	56	-	MDFZZ
656-6982-002	13499	8	57	-	MDFZZ
656-6982-003	13499	8	58	-	MDFZZ
656-6982-004	13499	8	59	-	MDFZZ
656-6982-005	13499	8	60	-	MDFZZ
656-6982-006	13499	8	55	-	MDFZZ
656-6983-001	13499	F15	-	-	XBFZZ
656-6983-002	13499	15	8	-	XBFZZ
656-6983-003	13499	15	1	-	MDFZZ
656-6983-004	13499	15	9	-	MDFZZ
656-6984-001	13499	15	11	-	MDFZZ
656-6985-001	13499	12	15	-	XBFZZ
656-6989-001	13499	16	5	-	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-6990-001	13499	F16	4	-	XBFZZ
656-6991-001	13499	12	45	-	MDFZZ
656-6991-002	13499	12	46	-	XBFZZ
656-6992-001	13499	6	156	-	ADDDD
656-6994-001	13499	12	43	-	MDDZZ
656-6994-002	13499	12	42	-	MDDZZ
656-6994-003	13499	12	41	-	MDDZZ
656-6994-004	13499	12	40	-	MDDZZ
656-7000-001	13499	12	49	-	XBFZZ
656-7001-001	13499	F12	26	-	XBFZZ
656-7002-001	13499	10	33	-	XBDDD
656-7003-001	13499	10	62	-	MDDZZ
656-7005-001	13499	9	26	-	XBFZZ
656-7006-001	13499	9	41	-	MDDZZ
656-7006-002	13499	9	29	-	XBFZZ
656-7006-003	13499	9	42	-	MDDZZ
656-7007-001	13499	9	39	-	PAFZZ
656-7008-001	13499	10	64	-	XBFZZ
656-7010-001	13499	F9	1	-	MFFZZ
656-7012-001	13499	F9	2	-	MFFZZ
656-7013-001	13499	F9	-	-	AFFZZ
656-7013-002	13499	9	9	-	XBFZZ
656-7013-003	13499	9	10	-	MDFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-7015-001	13499	9	6	-	PAFZZ
656-7015-002	13499	9	8	-	PAFZZ
656-7015-003	13499	9	7	-	PAFZZ
656-7015-004	13499	9	13	-	PAFZZ
656-7015-005	13499	9	12	-	PAFZZ
656-7016-001	13499	F9	3	-	MFFZZ
656-7017-001	13499	9	75	-	ADDDZ
656-7018-001	13499	9	5	-	PAFZZ
656-7021-001	13499	10	67	-	XBFZZ
656-7022-001	13499	10	84	-	XBFZZ
656-7023-001	13499	6	29A	-	XBDDD
656-7024-001	13499	6	27A	-	XBDDD
656-7028-001	13499	7	1	-	XBFZZ
656-7029-001	13499	7	2	-	XBDDD
656-7030-001	13499	6	28	-	PAFZZ
656-7031-001	13499	F10	5	-	XBFZZ
656-7032-001	13499	F9	14	-	XBFZZ
656-7033-001	13499	F9	10	-	AFFFZ
656-7033-002	13499	9	18	-	XBFZZ
656-7033-003	13499	9	17	-	XBFZZ
656-7033-004	13499	9	16	-	XBFZZ
656-7037-001	13499	6	116	-	PAFZZ
656-7038-001	13499	6	137	-	XBDDD

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-7039-001	13499	9	25	-	PAFZZ
656-7040-001	13499	9	24	-	XBDDD
656-7041-001	13499	F9	21	-	MDDDZ
656-7041-002	13499	9	23	-	MDDZZ
656-7041-003	13499	9	22	-	XBDZZ
656-7042-001	13499	F9	18	-	AFFFF
656-7042-002	13499	9	20	-	XBFZZ
656-7042-003	13499	9	19	-	PAFZZ
656-7044-001	13499	6	142	-	XBDDD
656-7048-001	13499	F6	144	-	PAFZZ
656-7049-001	13499	6	140	-	ADDDD
656-7050-002	13499	10	96A	-	XBFZZ
656-7052-002	13499	6	71	-	XBDDD
656-7053-001	13499	6	136	-	PAFZZ
656-7054-001	13499	10	107	-	AFFZZ
656-7055-001	13499	10	115	-	AFFZZ
656-7056-001	13499	10	124	-	AFFZZ
656-7057-001	13499	10	120	-	AFFZZ
656-7058-001	13499	F12	53	-	AFFZZ
656-7059-001	13499	F12	57	-	AFFZZ
656-7060-001	13499	6	143	-	PAFZZ
656-7061-001	13499	6	144	-	PAFZZ
656-7062-001	13499	F9	30	-	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-7062-002	13499	9	37	-	XBFZZ
656-7062-003	13499	9	36	-	XBFZZ
656-7062-004	13499	9	32	-	XBFZZ
656-7062-005	13499	9	33	-	XBFZZ
656-7062-006	13499	9	34	-	XBFZZ
656-7062-007	13499	9	35	-	XBFZZ
656-7062-008	13499	9	31	-	PAFZZ
656-7063-001	13499	F11	14	-	XBFZZ
656-7063-002	13499	11	17	-	XBFZZ
656-7067-001	13499	F11	13	-	XBFZZ
656-7068-001	13499	6	120	-	AFFZZ
656-7069-001	13499	10	129	-	AFFZZ
656-7070-001	13499	10	110	-	AFFZZ
656-7071-001	13499	10	104	-	AFFZZ
656-7072-001	13499	F9	38	-	PAFZZ
656-7074-001	13499	F10	74	-	XBFZZ
656-7074-002	13499	10	92	-	XBFZZ
656-7075-001	13499	F6	122	-	PAFZZ
656-7079-001	13499	9	45	-	PAFZZ
656-7079-002	13499	9	46	-	PAFZZ
656-7080-001	13499	F9	44	-	AFFFZ
656-7080-002	13499	9	47	-	MDDZZ
656-7081-001	13499	F9	56	-	AFFFZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-7081-002	13499	9	58	-	MDDZZ
656-7081-003	13499	9	57	-	XBFZZ
656-7083-001	13499	10	16	-	XBFZZ
656-7084-001	13499	10	19	-	XBFZZ
656-7084-002	13499	10	18	-	XBFZZ
656-7085-001	13499	12	67	-	AFFZZ
656-7086-001	13499	F12	71	-	AFFZZ
656-7087-001	13499	12	62	-	AFFZZ
656-7088-001	13499	12	75	-	AFFZZ
656-7089-001	13499	12	78	-	AFFZZ
656-7090-001	13499	12	81	-	AFFZZ
656-7091-001	13499	F12	83	-	AFFZZ
656-7092-001	13499	F12	126	-	AFFZZ
656-7093-001	13499	12	135	-	AFFZZ
656-7101-001	13499	F13	19	-	AFFZZ
656-7102-001	13499	12	143	-	AFFZZ
656-7103-001	13499	F13	24	-	AFFZZ
656-7104-001	13499	F14	29	-	AFFZZ
656-7105-001	13499	F14	22	-	AFFZZ
656-7106-001	13499	F14	17	-	AFFZZ
656-7107-001	13499	F14	12	-	AFFZZ
656-7108-001	13499	F13	14	-	AFFZZ
656-7109-001	13499	F13	9	-	AFFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-7110-001	13499	F13	6	-	AFFZZ
656-7111-001	13499	F13	3	-	AFFZZ
656-7112-001	13499	F14	9	-	AFFZZ
656-7113-001	13499	F14	6	-	AFFZZ
656-7114-001	13499	F14	10	-	AFFZZ
656-7115-001	13499	F14	3	-	AFFZZ
656-7116-001	13499	10	164	-	AFFZZ
656-7117-001	13499	10	134	-	AFFZZ
656-7118-001	13499	10	140	-	AFFZZ
656-7119-001	13499	10	146	-	AFFZZ
656-7120-001	13499	10	152	-	AFFZZ
656-7121-001	13499	10	168	-	AFFZZ
656-7126-001	13499	16	16	-	MDDZZ
656-7128-001	13499	16	15	-	XBFZZ
656-7129-001	13499	F16	20	-	ADDDZ
656-7129-002	13499	16	23	-	XBFZZ
656-7130-001	13499	10	14	-	XBFZZ
656-7134-001	13499	F9	40	-	AFFFF
656-7134-002	13499	F9	41	-	AFFFZ
656-7136-002	13499	18	19	-	MDDZZ
656-7136-003	13499	F6	10	-	XBDDD
656-7137-002	13499	18	20	-	MDDZZ
656-7137-003	13499	F6	5	-	XBDDD

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-7138-001	13499	F6	15	-	PAFZZ
656-7148-001	13499	6	166	-	XBDDD
656-7151-001	13499	18	14	-	MDDZZ
656-7151-002	13499	18	16	-	MDDZZ
656-7151-003	13499	18	17	-	MDDZZ
656-7151-004	13499	18	18	-	MDDZZ
656-7151-005	13499	18	12	-	MDDZZ
656-7153-001	13499	18	13	-	MDDZZ
656-7161-001	13499	F9	59	-	PAFZZ
656-7162-001	13499	F9	60	-	PAFZZ
656-7163-001	13499	9	55	-	MDDZZ
656-7164-001	13499	F10	9	-	XBFZZ
656-7166-001	13499	6	70	-	PAFZZ
656-7167-002	13499	12	34	-	XBDZZ
656-7167-003	13499	12	37	-	XBDZZ
656-7179-001	13499	6	158	-	PAFZZ
656-7180-001	13499	10	68	-	PAFZZ
656-7181-001	13499	10	85	-	PAFZZ
656-7182-001	13499	6	160	-	XBDDD
656-7183-001	13499	18	-	-	ADDDD
656-7185-001	13499	12	114	-	AFFZZ
656-7187-001	13499	12	122	-	AFFZZ
656-7188-001	13499	12	118	-	AFFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-7190-001	13499	F6	198	-	AFFZZ
656-7195-001	13499	6	150	-	XBDDD
656-7195-002	13499	6	149	-	XBDDD
656-7196-001	13499	6	148	-	PAFZZ
656-7198-002	13499	10	163	-	XBFZZ
656-7199-002	13499	F12	135	-	PAFZZ
656-7201-001	13499	F6	61	-	XBDDD
656-7202-001	13499	1	153	-	XBDDD
656-7203-001	13499	F10	14	-	MDDZZ
656-7204-001	13499	6	48	-	XBDDD
656-7204-002	13499	6	49	-	XBFZZ
656-7205-001	13499	F6	50	-	XBDDD
656-7205-002	13499	F6	53	-	XBDDD
656-7207-001	13499	6	157	-	XBDDD
656-7208-001	13499	F13	29	-	AFFZZ
656-7209-001	13499	F13	34	-	AFFZZ
656-7210-001	13499	F9	65	-	AFFZZ
656-7211-001	13499	F14	34	-	AFFZZ
656-7212-001	13499	F13	39	-	AFFZZ
656-7213-001	13499	F13	43	-	AFFZZ
656-7214-001	13499	F13	47	-	AFFZZ
656-7215-001	13499	F13	49	-	AFFZZ
656-7216-001	13499	F14	54	-	AFFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-7217-001	13499	F14	40	-	AFFZZ
656-7218-001	13499	F14	47	-	AFFZZ
656-7219-001	13499	F6	192	-	AFFZZ
656-7220-001	13499	12	126	-	PAFZZ
656-7222-001	13499	6	180	-	XBDDD
656-7225-001	13499	10	61	-	PAFZZ
656-7226-001	13499	12	108	-	AFFZZ
656-7227-001	13499	12	111	-	AFFZZ
656-7228-001	13499	10	151	-	XBFZZ
656-7229-001	13499	10	172	-	XBFZZ
656-7230-001	13499	F6	148	-	ADDDD
656-7231-001	13499	10	157	-	XBFZZ
656-7232-001	13499	6	80	-	XBDDD
656-7233-001	13499	6	74	-	XBDDD
656-7234-001	13499	6	79	-	XBDDD
656-7236-001	13499	F9	49	-	PAFZZ
656-7237-001	13499	16	2	-	XBFZZ
656-7238-001	13499	F6	18	-	XBDDD
656-7239-001	13499	F6	22	-	XBDDD
656-7240-001	13499	6	27	-	XBDDD
656-7241-001	13499	6	151	-	XBDDD
656-7241-002	13499	6	152	-	XBDDD
656-7242-002	13499	8	5	-	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-7243-001	13499	8	24	-	PAFZZ
656-7244-001	13499	17	34	-	XBDDD
656-7245-001	13499	13	52	-	XBFZZ
656-7247-001	13499	10	3	-	XBF--
656-7248-001	13499	F6	40	-	XBDDD
656-7250-001	13499	6	106	-	XBDDD
656-7251-001	13499	6	107	-	XBDDD
656-7252-001	13499	6	1	-	ADDDD
656-7253-001	13499	8	51	-	XBFZZ
656-7254-001	13499	F12	185	-	XBDZZ
656-7255-001	13499	13	2	-	PAFZZ
656-7255-002	13499	13	3	-	PAFZZ
656-7255-003	13499	14	2	-	PAFZZ
656-7256-001	13499	F6	36	-	XBDDD
656-7257-001	13499	6	36	-	XBDDD
656-7258-001	13499	6	30	-	XBDDD
656-7260-001	13499	10	116	-	XBDZZ
656-7260-002	13499	10	111	-	XBDZZ
656-7261-001	13499	10	108	-	XBDZZ
656-7261-002	13499	10	105	-	XBFZZ
656-7262-001	13499	6	34	-	ADDZZ
656-7263-001	13499	6	170	-	PAFZZ
656-7264-001	13499	6	167	-	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-7266-001	13499	F6	173	-	PAFZZ
656-7267-001	13499	F6	168	-	ADDDD
656-7270-001	13499	12	166	-	AFFZZ
656-7272-001	13499	6	155	-	MDDZZ
656-7273-001	13499	9	49	-	XBFZZ
656-7275-001	13499	F12	85	-	AFFZZ
656-7276-001	13499	12	101	-	AFFZZ
656-7278-001	13499	12	148	-	AFFZZ
656-7279-001	13499	12	157	-	AFFZZ
656-8682-001	13499	12	89	-	AFFZZ
656-8683-001	13499	12	92	-	AFFZZ
656-8684-001	13499	12	95	-	AFFZZ
656-8685-001	13499	12	98	-	AFFZZ
656-8687-001	13499	F12	18	-	ADDDD
656-8692-001	13499	6	184	-	PAFZZ
656-8693-001	13499	6	171	-	PAFZZ
656-8694-001	13499	6	191	-	XBDDD
656-8695-001	13499	6	189	-	XBDDD
656-8696-001	13499	6	190	-	XBDDD
656-8697-001	13499	6	188	-	PAFZZ
656-8698-001	13499	6	181	-	PAFZZ
656-8700-001	13499	12	23	-	ADDDD
656-8700-002	13499	12	26	-	MDDZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-8701-001	13499	6	5	-	XBDDD
656-8708-001	13499	12	6	-	PAFDD
656-8709-001	13499	12	7	-	PAFDD
656-8712-001	13499	6	172	-	PAFZZ
656-8712-002	13499	6	173	-	PAFZZ
656-8712-003	13499	6	183	-	PAFZZ
656-8713-001	13499	6	162	-	XBDDD
656-8714-001	13499	6	164	-	XBDDD
656-8715-001	13499	6	161	-	XBDDD
656-8716-001	13499	6	163	-	XBDDD
656-8719-001	13499	6	95	-	XBDDD
656-8720-001	13499	6	141	-	PAFZZ
656-8721-001	13499	F6	95	-	XBFZZ
656-8723-001	13499	F6	111	-	XBDDD
656-8724-001	13499	F6	99	-	XBDDD
656-8727-001	13499	6	118	-	PAOZZ
656-8733-001	13499	10	86B	-	XBFZZ
656-8734-001	13499	F6	124	-	AFFZZ
656-8745-001	13499	6	165	-	ADDDD
656-8750-001	13499	10	56B	-	XBFZZ
656-8751-001	13499	6	129	-	AFFZZ
656-8753-001	13499	17	4	-	XBDZZ
656-8754-001	13499	17	5	-	XBDZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
656-8755-001	13499	17	1	-	XBDZZ
656-8757-001	13499	17	2	-	XBDZZ
656-8758-001	13499	10	66	-	XBDZZ
656-9047-001	13499	13	1	-	PAFZZ
656-9050-001	13499	6	60	-	ADDDD
656-9053-001	13499	12	39	-	XBDZZ
656-9054-001	13499	10	46	-	XBFZZ
656-9059-001	13499	6	110	-	PAFZZ
656-9061-001	13499	6	111	-	PAFZZ
66101-4	00779	12	104	5999-00-163-4079	PAFZZ
662R1-1X1-4CDPL	76786	10	86A	5340-01-049-0905	PAFZZ
66258-3	00779	12	105	5999-00-374-8525	PAFZZ
677-3010	57003	9	60	-	PAFZZ
68NA7-68-02	72962	F9	41	5310-00-590-7718	PAFZZ
7-8648-5	02660	7	3	-	PAFZZ
7100-31-552	97464	F6	148	-	PAFZZ
730TW10C2-9-0	92657	10	102	-	XBDZZ
7485-10P22	71124	6	198	-	PAFZZ
7485-18P22	71124	13	34	-	PAFZZ
7485-5P22	71124	13	24	-	PAFZZ
800-030-1-4	83259	7	12	5330-00-600-8373	PAFZZ
800-030-6	83259	F8	26	5330-00-171-6497	PAFZZ
8630-14	49051	13	27	5935-00-804-5267	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
90281192-001	96238	15	12	-	XBDZZ
92LN1030B	81812	16	12	5935-00-491-1797	PAFZZ

GROUP 0101 SHELTER, ELECTRICAL, S-250( )/G MODIFIED
(See TM 11-5895-1185-13)

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
MS15795-810	96906	6	213	5310-00-582-5677	PAFZZ
MS35338-139	96906	6	212	5310-00-933-8121	PAFZZ
MS51957-80	96906	6	211	5305-00-071-1316	PAFZZ
NAS133053B266	03481	6	205	-	XBFZZ
S10B116	03481	6	204	5310-00-999-4191	PAFZZ
S31-425	03481	6	207	5310-00-771-2195	PAFZZ
656-6882-001	13499	6	203	-	ADDDD
656-7051-001	13499	6	208	-	XBFZZ
656-7158-001	13499	6	210	-	XBFZZ
656-7158-002	13499	6	209	-	XBFZZ

GROUP 0201 INTERFACE, HIGH LEVEL, 1290 HL
(See TM 11-5895-1185-13-2)

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
C3918	15230	5-3	-	-	XBFZZ
D5268	15230	5-1	-	5805-01-134-4424	XBFZZ
D5307	15230	5-1	-	-	ADDDD

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
D5308	15230	5-1	-	-	ADDDD
524108	15230	5-3	-	-	PAFZZ
GROUP 0202	MODEM, FSK, 8 CHANNEL (See TM 11-5895-1185-13-2)				
D5180-1	15230	8-7	-	5805-01-106-1819	PAFLD
D5214-1	15230	8-5	-	-	PAFLD
D5216	15230	8-9	-	5805-01-115-0388	PAFLD
D5286	15230	-	-	5805-01-134-4722	PADLD
D5372	15230	8-11	-	-	PADLD
D5375	15230	8-11	-	5805-01-115-2879	PADLD
D5379	15230	8-1	-	5805-01-105-9990	PAFLD
GROUP 0203	POWER SUPPLY, LOOP, 106A-1 (See TM 11-5895-1185-13-2)				
D5226	15230	2	-	-	ADDDZ
D5227-2	15230	4	-	-	PAFDD

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
GROUP 03	KEYER, TONE, TC-201F (See T.O. 31W2-2T-102 W/Difference Data CTM-7034, iss. 2)				
43000010-11	96238	6-2	19	5955-00-408-3775	PAFZZ
43000010-12	96238	6-2	20	5955-00-408-3776	PAFZZ
43000013-006	96238	6-1	15	5915-00-107-4209	PAFZZ
80416000-000	96238	A-4	-	5805-00-361-0128	PAFDD
90416001-006	96238	6-1	-	5805-00-204-2811	PAFDD
GROUP 04	CONVERTER, TONE, TC-301F (See T.O. 31W2-2T-102 w/Difference Data CTM-7034, iss. 2)				
43000014-006	96238	6-3	15	-	PAFZZ
43000015-006	96238	6-3	13	-	PAFZZ
43000225-000	96238	6-3	22	-	PAFZZ
80415010-001	96238	A-3	-	-	PAFDD
90416002-006	96238	6-3	-	-	PAFDD

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
GROUP 05	TRANSMITTER, RADIO, T-1453/TSC-60(V) (See T.O. 31S1-2TSC60-211)				
622-3460-001	13499	1	4	-	PAFDD
622-3473-005	13499	1	-	-	PAFDD
622-3499-001	13499	1	5	-	PBFDD
623-2080-001	13499	1	24	5895-01-113-7069	PAFDD
623-2080-002	13499	1	23	5895-01-113-7070	PAFZZ
623-2080-003	13499	1	22	5895-01-113-7071	PAFDD
634-8199-002	13499	1	30	-	PAFZZ
634-8201-001	13499	1	33	-	ADDL-
634-8211-001	13499	1	36	-	PBFDD
635-0656-001	13499	1	18	5895-01-113-7072	PAFZZ
635-0657-001	13499	1	21	5895-01-113-7073	PAFDD
635-0825-012	13499	2	50	-	PAFZZ
635-0830-001	13499	2	48	-	PAFZZ
635-4930-002	13499	1	25	5895-01-113-6533	PAFDD
635-9649-001	13499	1	26	-	PAFDD
637-1768-002	13499	1	14	5895-01-113-9482	PAFDD
637-1781-006	13499	2	36	-	PAFDD
637-2712-001	13499	1	76	5915-01-112-1975	PAFZZ
638-6476-001	13499	1	15	5895-01-113-6978	PAFDD
638-6597-001	13499	2	47	-	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
638-6617-001	13499	7	16	-	PBFDD
638-6622-001	13499	1	9	5895-01-113-6980	PAFDD
638-6636-001	13499	1	12	5895-01-113-7393	PAFDD
638-6636-002	13499	1	11	5895-01-113-7394	PAFDD
638-6636-003	13499	1	10	5895-01-113-7395	PAFDD
638-6659-001	13499	1	13	5895-01-113-7396	PAFDD
638-6896-002	13499	1	6	5895-01-113-7064	PAFDD
638-6962-001	13499	1	19	5895-01-113-7065	PAFDD
642-6962-001	13499	1	20	5895-01-113-7081	PAFDD
642-3135-001	13499	1	8	5895-01-113-7082	PAFDD
642-3137-001	13499	1	7	5895-01-113-7083	PAFDD
7S21	65092	2	35	-	PAFZZ
GROUP 08	RECEIVER, RADIO, R2222/TSC-60(V) (See T.O. 31S1-2TSC60-201)				
X8014-1	14208	2	56	5965-00-866-3371	PAFZZ
622-3452-006	13499	1	23	-	PAFZZ
622-3460-001	13499	1	42	-	PAFDD
622-3475-006	13499	1	-	5820-01-128-7754	PAODD
622-3499-001	13499	1	43	-	PBFDD
623-2080-001	13499	1	39	5895-01-113-7069	PAFDD
623-2080-002	13499	1	38	5895-01-113-7070	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
623-2080-003	13499	1	37	5895-01-113-7071	PAFDD
634-8200-002	13499	1	164	-	XADDD
634-8201-001	13499	1	45	-	ADDLL
634-8224-001	13499	1	49	-	PAFDD
635-0656-001	13499	1	33	5895-01-113-7072	PAFZZ
635-0657-001	13499	1	36	5895-01-113-7073	PAFDD
635-0748-002	13499	1	29	5895-01-113-6988	PAFDD
635-0825-013	13499	2	49	-	PAFZZ
635-0830-001	13499	2	41	-	PAFZZ
635-4930-002	13499	1	40	5895-01-113-6533	PAFDD
635-9649-001	13499	1	44	-	PAFDD
637-1767-003	13499	1	27	5895-01-113-6966	PAFZZ
637-1781-006	13499	2	48	-	PAFDD
637-2712-003	13499	1	89	-	PAFZZ
638-6627-001	13499	1	73	-	PBFDD
638-6629-001	13499	1	21	5895-01-113-6981	PAFDD
638-6871-001	13499	1	22	5895-01-113-1063	PAFDD
638-6873-001	13499	4	30	-	ADDDL
638-6896-002	13499	1	18	5895-01-113-7064	PAFDD
638-6975-002	13499	1	24	-	PAFDD
638-6975-002	13499	1	25	5895-01-113-7067	PAFDD
638-6975-003	13499	1	26	5895-01-113-7068	PAFDD
642-2451-001	13499	1	34	5895-01-113-7081	PAFDD

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
642-3135-001	13499	1	20	5895-01-113-7082	PAFDD
7S21	65092	2	52	-	PAFZZ
GROUP 09	CONTROL MONITOR, C-11070/TSC-60(V) (See T.O. 31S1-2TSC60-181)				
AP1-328-110	81541	1	8	5925-00-167-0628	PAFZZ
A12475	70674	1	4A	-	PAFZZ
JN17-4327A	56289	1	4	5915-00-879-1069	PAFZZ
RB67-0ML9	86797	1	21	-	XBDDD
622-6016-001	13499	1	-	5820-01-129-1934	ADDDD
649-4131-001	13499	1	33	-	PAFDD
649-7103-001	13499	1	-	-	ADDDZ
649-7104-001	13499	1	13	-	ADDDZ
649-7108-001	13499	1	-	-	ADDDZ
649-7109-001	13499	1	30	-	PAFDD
649-7110-001	13499	1	31	-	PAFDD
649-7111-002	13499	1	28	-	PAFDD
69-4073	74199	1	18	5965-00-403-4275	PAFZZ
966086-A01	16244	1	32	-	PAFDD

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
GROUP 10	FILTER, BANDPASS, F-1531/TSC-60(V) (See T.O. 31S1-2TSC60-271)				
F02A2SOV1AS	81349	1	18	5920-00-280-4465	PAFZZ
F02A2SOV2AS	81349	1	17	5920-00-474-6125	PAFZZ
622-3386-001	13499	1	-	5895-01-112-2194	PAFDD
637-2828-001	13499	1	8	5895-01-113-6967	PAFDD
637-2849-001	13499	1	7	5895-01-113-6459	PAFDD
637-2850-001	13499	1	5	5895-01-113-7061	PAFDD
637-2851-001	13499	1	6	5895-01-113-6965	PAFDD
637-2852-001	13499	1	10	5895-01-113-7042	PAFDD
637-4697-001	13499	1	11	5895-01-113-6967	PAFDD
637-6700-001	13499	1	13	-	XADDD
637-4716-001	13499	1	9	-	MDDZZ
637-4724-001	13499	1	12	5895-01-113-6977	PAFDD
GROUP 11	AMPLIFIER, RF POWER, AM-7163/TSC-60(V) (See TM 11-5895-1185-13-1)				
622-3490-001	13499	1	-	-	PAODD
635-0745-001	13499	1	12	5820-01-114-4831	PAFDD
642-3592-001	13499	1	10	5820-01-132-3648	PAFDD
642-3593-001	13499	1	11	5895-01-132-7804	PAFDD

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
646-6400-001	13499	1	14	-	PAFDD
646-6406-001	13499	1	5	-	PAFDD
646-6407-001	13499	1	9	5895-01-132-6887	PAFDD
646-6433-001	13499	1	42	-	PDDLT
646-7120-001	13499	1	13	5895-01-132-6889	PAFDD
GROUP 12	POWER SUPPLY, PP-7830/TSC-60(V) (See TM 11-5895-1185-13-1)				
622-3512-002	13499	1	-	-	PAODD
642-3197-001	13499	1	9	5895-01-132-6148	PAFDD
642-3579-001	13499	1	8	5895-01-132-6886	PAFDD
646-6812-001	13499	1	7	5895-01-132-6149	PAFDD
646-6882-001	13499	1	6	5895-01-132-6888	PAFDD
646-6883-001	13499	1	4	5895-01-132-6150	PBDDD
651-4140-001	13499	1	10	5895-01-132-6151	PAFLD
GROUP 13	COUPLER, ANTENNA, CU-2294/TSC-60(V) (See TM 11-5895-1185-13-3)				
MS75089-3	96906	1	16	5950-01-008-8645	PAFZZ
M15733-52-0003	81349	1	40	5915-00-978-4336	PAFZZ
30AC	98021	1	6	4820-00-594-7677	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
622-3515-002	13499	1	-	-	PAFDD
629-5642-001	13499	1	14	5895-01-127-4020	PAFLD
629-5655-003	13499	1	2	5895-01-131-0597	PAFLD
637-4006-001	13499	1	11	5895-01-127-4123	ADDDD
637-4009-001	13499	1	52	-	ADDZZ
638-4898-001	13499	1	30	-	PAFZZ
646-5781-001	13499	1	9	-	PAFDD
651-4240-001	13499	1	4	-	PAFLD
GROUP 14	ANTENNA, RECEIVE (See TM 11-5895-1185-13)				
120-31	00414	F4	6	-	AFFZZ
547-1137-005	13499	4	1	5820-00-885-6504	PAFZZ
656-9044-001	13499	4	-	-	ADDZZ
75361	00414	4	8	5895-00-733-6043	PAFZZ
75371	00414	4	10	5895-00-733-6045	PAFZZ
75381	00414	4	11	5895-00-733-6046	PAFZZ
75391	00414	4	7	5895-00-733-6042	PAFZZ
75431	00414	4	9	5895-00-733-6044	PAFZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
GROUP 15	ANTENNA, TRANSMIT (See TM 11-5895-1185-13)				
MS17830-4C	96906	F4	3	5310-00-241-6604	PAFZZ
015-1211-000	20370	4	5	5985-00-885-6502	PAOZZ
120-31	00414	F4	6	-	PAFZZ
21CAD	03914	4	3	5306-00-434-5290	PAFZZ
310-0050-000	79807	F4	3	5310-00-641-9202	PAFZZ
547-1137-005	13499	4	1	5820-00-885-6504	MDDDD
547-1243-002	13499	4	6	5820-00-226-4208	PAOFF
547-1244-002	13499	4	4	5970-00-068-7350	PAFZZ
656-8749-001	13499	4	-	-	ADDZZ
75361	00414	4	8	5895-00-733-6043	PAFZZ
75371	00414	4	10	5895-00-733-6045	PAFZZ
75381	00414	4	11	5895-00-733-6046	PAFZZ
75391	00414	4	7	5895-00-733-6042	PAFZZ
75431	00414	4	9	5895-00-733-6044	PAFZZ
793-5686-002	13499	4	2	-	PAOZZ

PART NUMBER	FSCM	FIG	IND	NATIONAL STOCK NUMBER	SMR CODE
GROUP 17	HEADSET/MICROPHONE (See TM 11-5895-1185-13)				
H10-30	71483	1	160	-	PAFZZ
MS3116F10-6P	96906	1	157	5935-00-762-1504	PAFZZ
63777-000	28856	1	159	-	PAFZZ
656-3420-001	13499	F1	156	-	AFFZZ
656-3420-002	13499	1	158	-	PAFZZ

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Stateside, N.J. 07703

DATE SENT 10 July 1975

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5840-340-12	23 Jan 74	Radar Set AN/PRC-76

BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°. REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		F03		Zone C 3. On J1-2, change "+24 VDC to "+5 VDC." REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

SAMPLE

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PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
SSG I. M. DeSpiritof 999-1776

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SSG I. M. DeSpiritof

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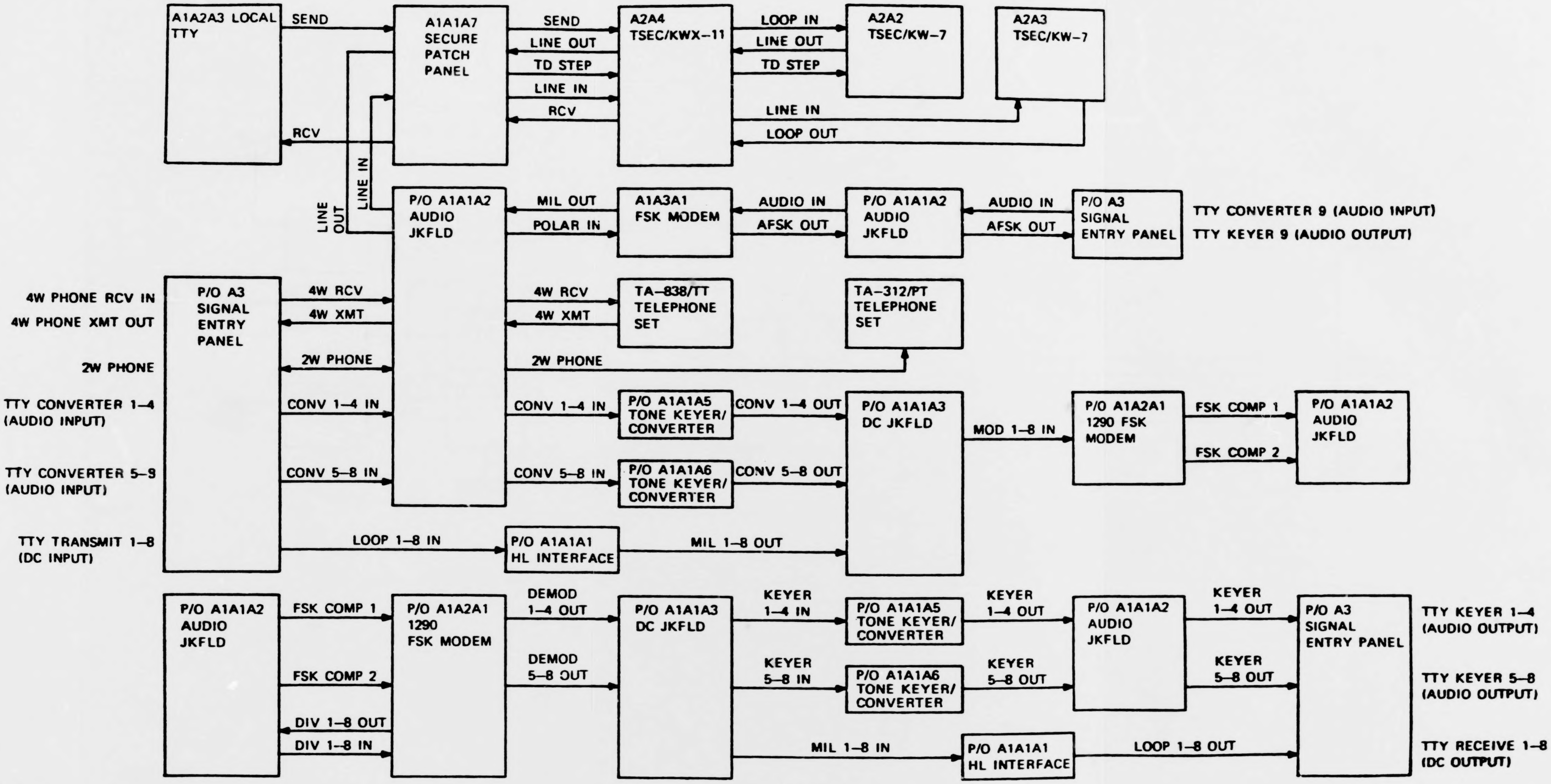
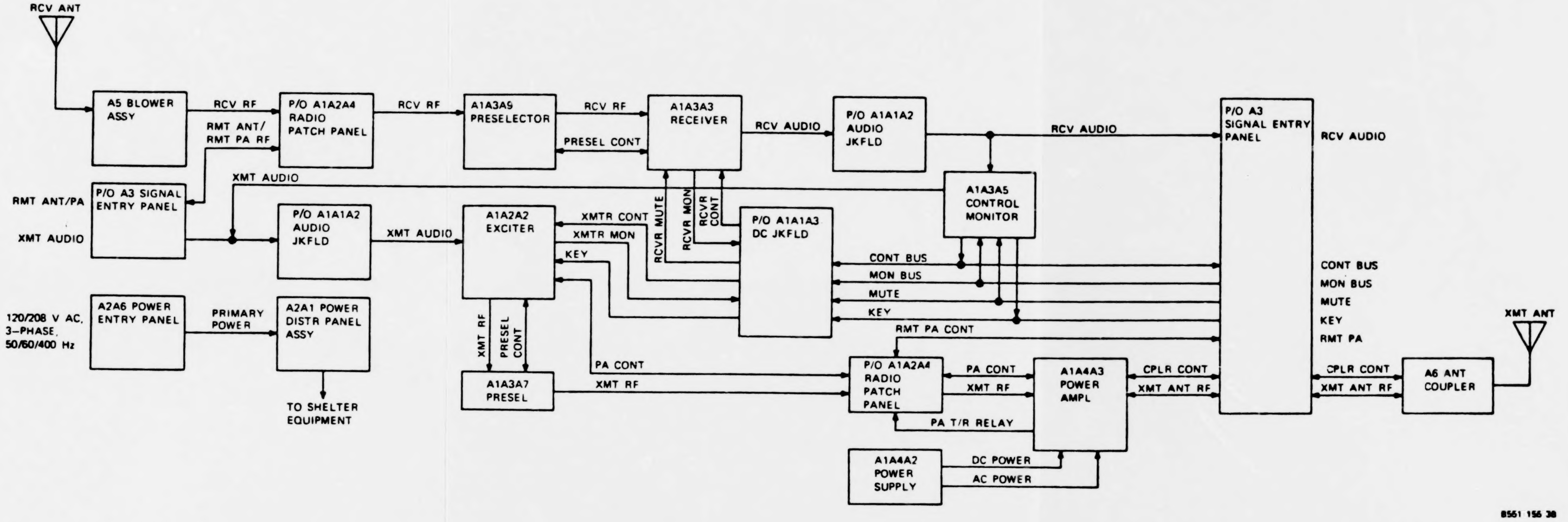
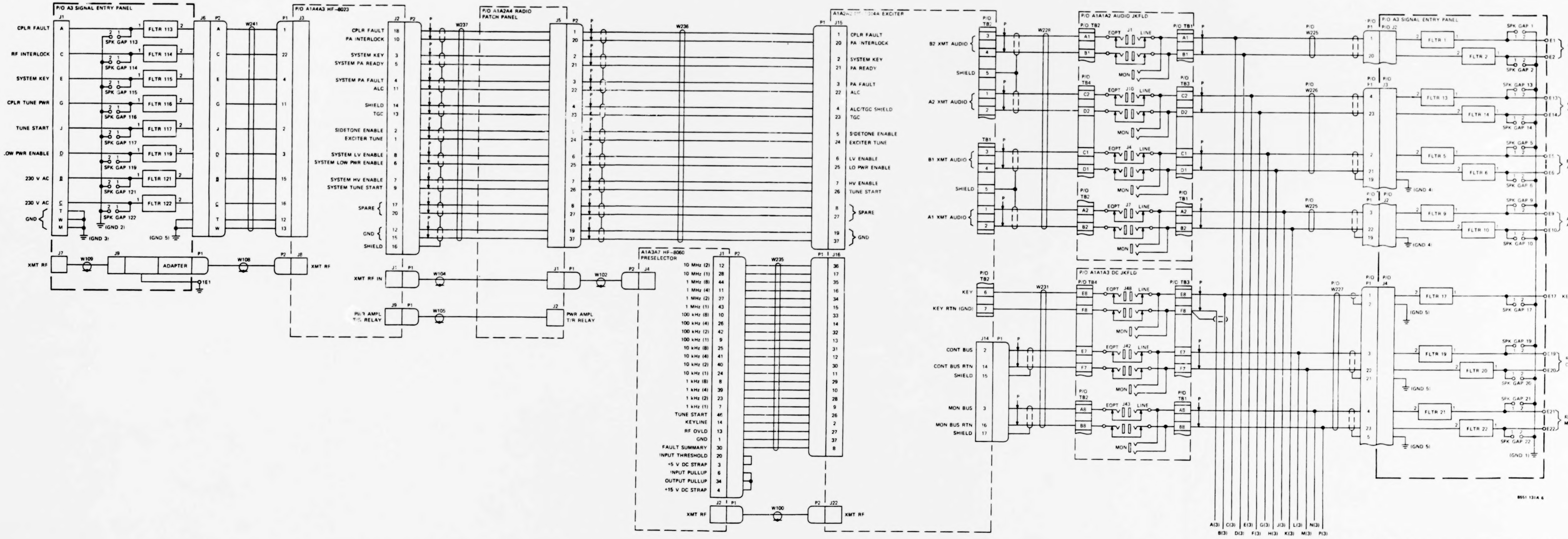

A1A2A3 LOCAL TTY
SEND
RCV
A1A1A7 SECURE PATCH PANEL
SEND
LINE OUT
TD STEP
LINE IN
RCV
A2A4 TSEC/KWX-11
LOOP IN
LINE OUT
TD STEP
A2A2 TSEC/KW-7
A2A3 TSEC/KW-7
LINE IN
LOOP OUT
LINE OUT
LINE IN
P/O A1A1A2 AUDIO JKFLD
MIL OUT
POLAR IN
A1A3A1 FSK MODEM
AUDIO IN
AFSK OUT
P/O A1A1A2 AUDIO JKFLD
AUDIO IN
AFSK OUT
P/O A3 SIGNAL ENTRY PANEL
TTY CONVERTER 9 (AUDIO INPUT)
TTY KEYER 9 (AUDIO OUTPUT)
4W PHONE RCV IN
4W PHONE XMT OUT
2W PHONE
TTY CONVERTER 1–4 (AUDIO INPUT)
TTY CONVERTER 5–8 (AUDIO INPUT)
TTY TRANSMIT 1–8 (DC INPUT)
P/O A3 SIGNAL ENTRY PANEL
4W RCV
4W XMT
2W PHONE
CONV 1–4 IN
CONV 5–8 IN
LOOP 1–8 IN
4W RCV
4W XMT
TA-838/TT TELEPHONE SET
TA-312/PT TELEPHONE SET
2W PHONE
CONV 1–4 IN
P/O A1A1A5 TONE KEYER/ CONVERTER
CONV 1–4 OUT
CONV 5–8 IN
P/O A1A1A6 TONE KEYER/ CONVERTER
CONV 5–8 OUT
P/O A1A1A1 HL INTERFACE
MIL 1–8 OUT
P/O A1A1A3 DC JKFLD
MOD 1–8 IN
P/O A1A2A1 1290 FSK MODEM
FSK COMP 1
FSK COMP 2
P/O A1A1A2 AUDIO JKFLD
P/O A1A1A2 AUDIO JKFLD
FSK COMP 1
FSK COMP 2
DIV 1–8 OUT
DIV 1–8 IN
P/O A1A2A1 1290 FSK MODEM
DEMOD 1–4 OUT
DEMOD 5–8 OUT
P/O A1A1A3 DC JKFLD
KEYER 1–4 IN
KEYER 5–8 IN
MIL 1–8 IN
P/O A1A1A5 TONE KEYER/ CONVERTER
P/O A1A1A6 TONE KEYER/ CONVERTER
P/O A1A1A1 HL INTERFACE
KEYER 1–4 OUT
KEYER 5–8 OUT
LOOP 1–8 OUT
P/O A1A1A2 AUDIO JKFLD
KEYER 1–4 OUT
KEYER 5–8 OUT
P/O A3 SIGNAL ENTRY PANEL
TTY KEYER 1–4 (AUDIO OUTPUT)
TTY KEYER 5–8 (AUDIO OUTPUT)
TTY RECEIVE 1–8 (DC OUTPUT)

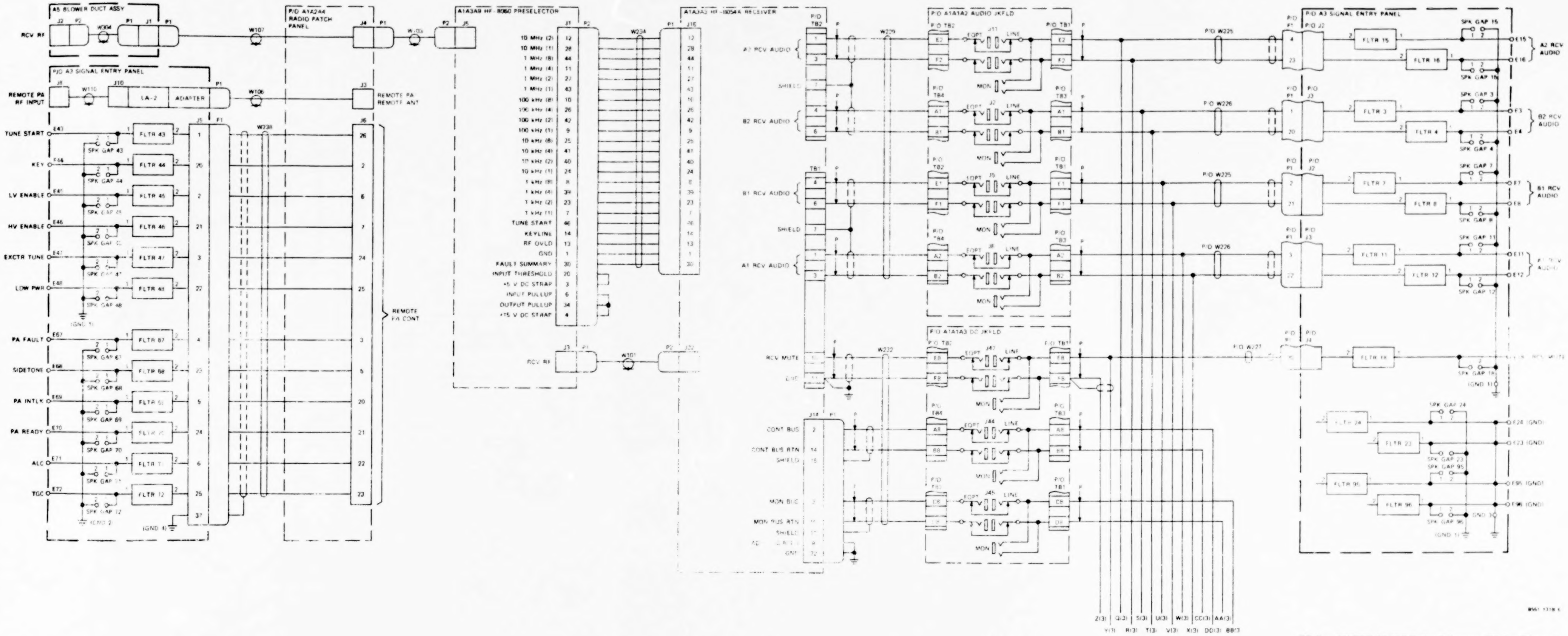
FO-1. AN/TSC-60(V)7 Block Diagram (Sheet 1 of 2)


RCV ANT
A5 BLOWER ASSY
RCV RF
RMT ANT/ RMT PA RF
P/O A1A2A4 RADIO PATCH PANEL
RCV RF
A1A3A9 PRESELECTOR
RCV RF
PRESEL CONT
A1A3A3 RECEIVER
RCV AUDIO
P/O A1A1A2 AUDIO JKFLD
RCV AUDIO
P/O A3 SIGNAL ENTRY PANEL
RCV AUDIO
XMT AUDIO
RMT ANT/PA
XMT AUDIO
P/O A3 SIGNAL ENTRY PANEL
P/O A1A1A2 AUDIO JKFLD
XMT AUDIO
A1A2A2 EXCITER
XMTR CONT
XMTR MON
KEY
RCVR MUTE
RCVR MON
RCVR CONT
P/O A1A1A3 DC JKFLD
A1A3A5 CONTROL MONITOR
CONT BUS
MON BUS
MUTE
KEY
CONT BUS
MON BUS
MUTE
KEY
RMT PA
RMT PA CONT
120/208 V AC, 3-PHASE, 50/60/400 Hz
A2A6 POWER ENTRY PANEL
PRIMARY POWER
A2A1 POWER DISTR PANEL ASSY
TO SHELTER EQUIPMENT
XMT RF
PRESEL CONT
A1A3A7 PRESEL
PA CONT
XMT RF
P/O A1A2A4 RADIO PATCH PANEL
PA CONT
XMT RF
PA T/R RELAY
A1A4A3 POWER AMPL
CPLR CONT
XMT ANT RF
CPLR CONT
XMT ANT RF
A6 ANT COUPLER
XMT ANT
A1A4A2 POWER SUPPLY
DC POWER
AC POWER
8561 156 38

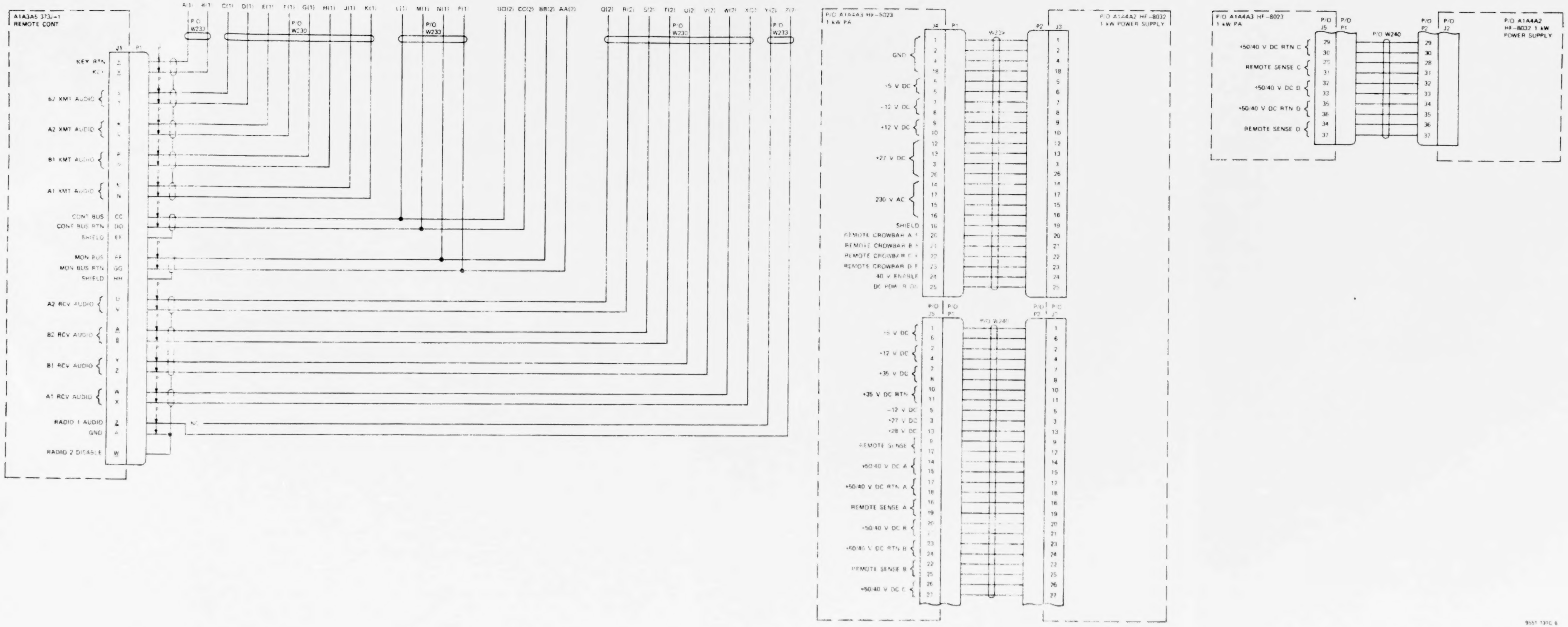
FO-1. AN/TSC-60(V)7 Block Diagram (Sheet 2 of 2)


P/O A3 SIGNAL ENTRY PANEL
J1
CPLR FAULT
RF INTERLOCK
SYSTEM KEY
CPLR TUNE PWR
TUNE START
LOW PWR ENABLE
230 V AC
230 V AC
GND
FLTR 113
FLTR 114
FLTR 115
FLTR 116
FLTR 117
FLTR 119
FLTR 121
FLTR 122
SPK GAP 113
SPK GAP 114
SPK GAP 115
SPK GAP 116
SPK GAP 117
SPK GAP 119
SPK GAP 121
SPK GAP 122
(GND 2)
(GND 3)
(GND 5)
J6
P2
W241
P1
J3
XMT RF
J7
W109
J9
ADAPTER
W108
P2
J8
XMT RF
1E1
P/O A1A4A3 HF-8023
J2
P2
CPLR FAULT
PA INTERLOCK
SYSTEM KEY
SYSTEM PA READY
SYSTEM PA FAULT
ALC
SHIELD
TGC
SIDETONE ENABLE
EXCITER TUNE
SYSTEM LV ENABLE
SYSTEM LOW PWR ENABLE
SYSTEM HV ENABLE
SYSTEM TUNE START
SPARE
GND
SHIELD
XMT RF IN
W104
PWR AMPL T/R RELAY
W105
W237
P/O A1A2A4 RADIO PATCH PANEL
J5
P2
J1
P1
W102
J2
PWR AMPL T/R RELAY
P2
J4
W236
EXCITER
P1
J15
CPLR FAULT
PA INTERLOCK
SYSTEM KEY
PA READY
PA FAULT
ALC
ALC/TGC SHIELD
TGC
SIDETONE ENABLE
EXCITER TUNE
LV ENABLE
LO PWR ENABLE
HV ENABLE
TUNE START
SPARE
GND
A1A3A7 HF-8060 PRESELECTOR
J1
P2
10 MHz (2)
10 MHz (1)
1 MHz (8)
1 MHz (4)
1 MHz (2)
1 MHz (1)
100 kHz (8)
100 kHz (4)
100 kHz (2)
100 kHz (1)
10 kHz (8)
10 kHz (4)
10 kHz (2)
10 kHz (1)
1 kHz (8)
1 kHz (4)
1 kHz (2)
1 kHz (1)
TUNE START
KEYLINE
RF OVLD
GND
FAULT SUMMARY
INPUT THRESHOLD
+5 V DC STRAP
INPUT PULLUP
OUTPUT PULLUP
+15 V DC STRAP
W235
P1
J16
XMT RF
J2
P1
W100
P2
J22
XMT RF
P/O TB2
B2 XMT AUDIO
SHIELD
A2 XMT AUDIO
TB1
B1 XMT AUDIO
SHIELD
A1 XMT AUDIO
W228
KEY
KEY RTN (GND)
J14
P1
CONT BUS
CONT BUS RTN
SHIELD
MON BUS
MON BUS RTN
SHIELD
W231
P/O A1A1A2 AUDIO JKFLD
P/O TB2
P/O TB1
P/O TB4
P/O TB3
EQPT
LINE
J1
J10
J4
J7
MON
P/O A1A1A3 DC JKFLD
J48
J42
J43
P/O W225
P/O W226
P/O W225
P/O W227
P/O A3 SIGNAL ENTRY PANEL
P/O P1
P/O J2
P/O J3
P/O J4
(GND 4)
(GND 5)
FLTR 1
FLTR 2
FLTR 13
FLTR 14
FLTR 5
FLTR 6
FLTR 9
FLTR 10
FLTR 17
FLTR 19
FLTR 20
FLTR 21
FLTR 22
SPK GAP 1
SPK GAP 2
SPK GAP 13
SPK GAP 14
SPK GAP 5
SPK GAP 6
SPK GAP 9
SPK GAP 10
SPK GAP 17
SPK GAP 19
SPK GAP 20
SPK GAP 21
SPK GAP 22
E1
E2
B2 XMT AUDIO
E13
E14
A2 XMT AUDIO
E5
E6
B1 XMT AUDIO
E9
E10
A1 XMT AUDIO
E17 KEYLINE
E19
E20
RADIO CONT
E21
E22
RADIO MON
(GND 1)
A(3)
B(3)
C(3)
D(3)
E(3)
F(3)
G(3)
H(3)
J(3)
K(3)
L(3)
M(3)
N(3)
P(3)
8551 131A 6

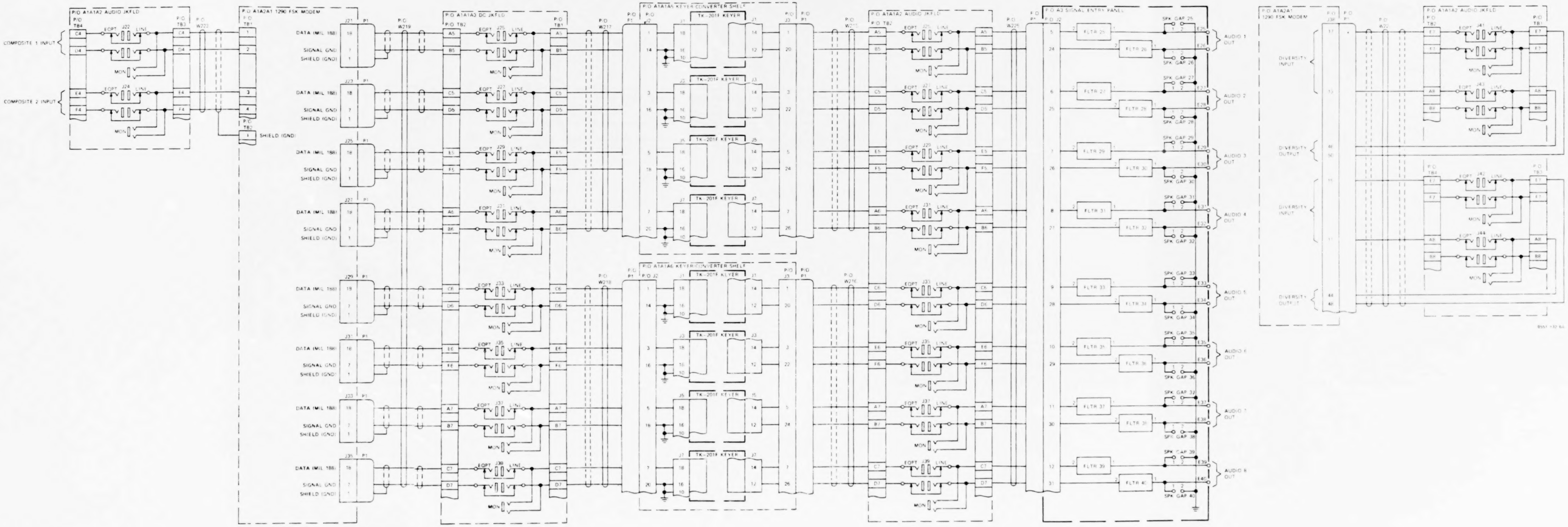
FO-2. AN/TSC-60(V)7 Radio Subsystem Wiring Diagram
(Sheet 1 of 3)


A5 BLOWER DUCT ASSY
RCV RF
W304
W107
P/O A1A2A4 RADIO PATCH PANEL
W105
A1A3A9 HF-8060 PRESELECTOR
A1A3A3 HF-8054A RECEIVER
P/O A3 SIGNAL ENTRY PANEL
REMOTE PA RF INPUT
W110
LA-2
ADAPTER
W106
REMOTE PA REMOTE ANT
TUNE START
KEY
LV ENABLE
HV ENABLE
EXCTR TUNE
LOW PWR
PA FAULT
SIDETONE
PA INTLK
PA READY
ALC
TGC
W238
REMOTE PA CONT
10 MHz (2)
10 MHz (1)
1 MHz (8)
1 MHz (4)
1 MHz (2)
1 MHz (1)
100 kHz (8)
100 kHz (4)
100 kHz (2)
100 kHz (1)
10 kHz (8)
10 kHz (4)
10 kHz (2)
10 kHz (1)
1 kHz (8)
1 kHz (4)
1 kHz (2)
1 kHz (1)
TUNE START
KEYLINE
RF OVLD
GND
FAULT SUMMARY
INPUT THRESHOLD
+5 V DC STRAP
INPUT PULLUP
OUTPUT PULLUP
+15 V DC STRAP
W234
W101
A2 RCV AUDIO
B2 RCV AUDIO
B1 RCV AUDIO
A1 RCV AUDIO
SHIELD
RCV MUTE
CONT BUS
CONT BUS RTN
MON BUS
MON BUS RTN
W229
W232
P/O A1A1A2 AUDIO JKFLD
P/O A1A1A3 DC JKFLD
EQPT
LINE
MON
P/O W225
P/O W226
P/O W227
FLTR 15
FLTR 16
FLTR 3
FLTR 4
FLTR 7
FLTR 8
FLTR 11
FLTR 12
FLTR 18
FLTR 24
FLTR 23
FLTR 95
FLTR 96
SPK GAP 15
SPK GAP 16
A2 RCV AUDIO
B2 RCV AUDIO
B1 RCV AUDIO
A1 RCV AUDIO
E24 (GND)
E23 (GND)
E95 (GND)
E96 (GND)
Z(3)
Y(3)
Q(3)
R(3)
S(3)
T(3)
U(3)
V(3)
W(3)
X(3)
CC(3)
DD(3)
AA(3)
BB(3)

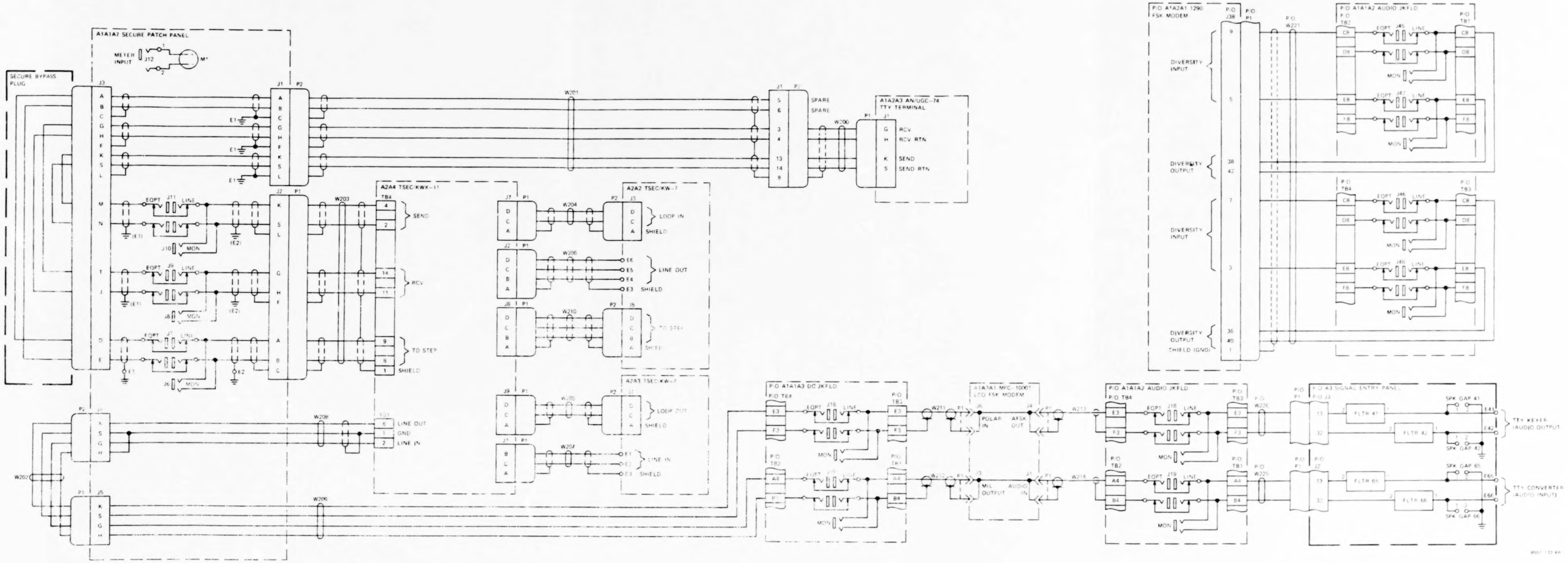
FO-2 AN/TSC-60(V)7 Radio Subsystem Wiring Diagram
(Sheet 2 of 3)


A1A3A5 373U-1
REMOTE CONT
J1
P1
KEY RTN
KEY
B2 XMT AUDIO
A2 XMT AUDIO
B1 XMT AUDIO
A1 XMT AUDIO
CONT BUS
CONT BUS RTN
SHIELD
MON BUS
MON BUS RTN
SHIELD
A2 RCV AUDIO
B2 RCV AUDIO
B1 RCV AUDIO
A1 RCV AUDIO
RADIO 1 AUDIO
GND
RADIO 2 DISABLE
CC
DD
EE
FF
GG
HH
NC
A(1) B(1) C(1) D(1) E(1) F(1) G(1) H(1) J(1) K(1) L(1) M(1) N(1) P(1)
DD(2) CC(2) BB(2) AA(2)
Q(2) R(2) S(2) T(2) U(2) V(2) W(2) X(2) Y(2) Z(2)
P/O W233
P/O W230
P/O W233
P/O W230
P/O W233
P/O A1A4A3 HF-8023
1 kW PA
J4
P1
W234
P2
J3
P/O A1A4A2 HF-8032
1 kW POWER SUPPLY
GND
+5 V DC
-12 V DC
+12 V DC
+27 V DC
230 V AC
SHIELD
REMOTE CROWBAR A F
REMOTE CROWBAR B F
REMOTE CROWBAR C F
REMOTE CROWBAR D F
40 V ENABLE
DC POWER ON
P/O J5
P/O P1
P/O W240
P/O P2
P/O J2
+5 V DC
+12 V DC
+35 V DC
+35 V DC RTN
-12 V DC
+27 V DC
+28 V DC
REMOTE SENSE
+50/40 V DC A
+50/40 V DC RTN A
REMOTE SENSE A
+50/40 V DC B
+50/40 V DC RTN B
REMOTE SENSE B
+50/40 V DC C
P/O A1A4A3 HF-8023
1 kW PA
P/O J5
P/O P1
P/O W240
P/O P2
P/O J2
P/O A1A4A2
HF-8032 1 kW
POWER SUPPLY
+50/40 V DC RTN C
REMOTE SENSE C
+50/40 V DC D
+50/40 V DC RTN D
REMOTE SENSE D

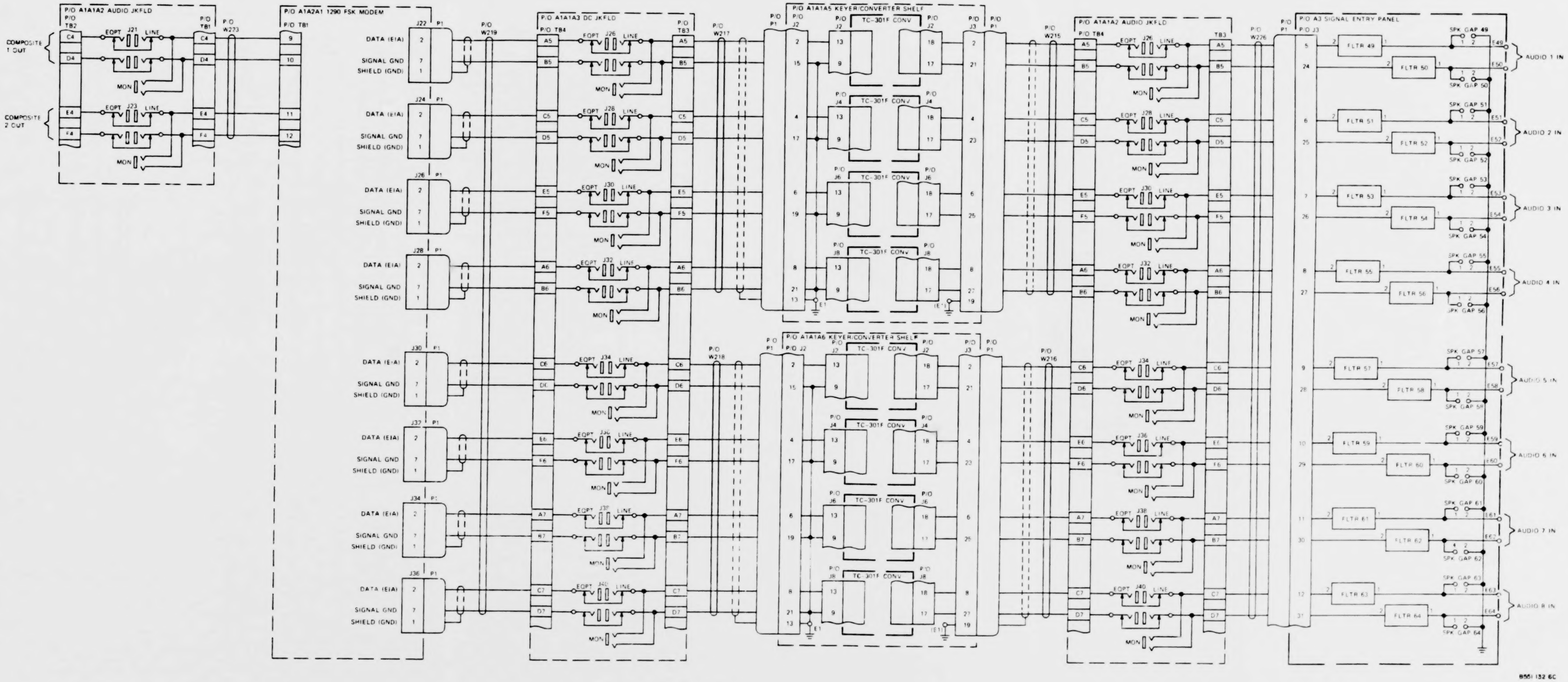
FO-2. AN/TSC-60(V)7 Radio Subsystem Wiring Diagram
(Sheet 3 of 3)


P/O A1A1A2 AUDIO JKFLD
COMPOSITE 1 INPUT
COMPOSITE 2 INPUT
P/O W223
P/O A1A2A1 1290 FSK MODEM
SHIELD (GND)
DATA (MIL 188)
SIGNAL GND
SHIELD (GND)
P/O W219
P/O A1A1A3 DC JKFLD
P/O W217
P/O W218
P/O A1A1A5 KEYER CONVERTER SHELF
P/O A1A1A6 KEYER CONVERTER SHELF
TK-201F KEYER
P/O W215
P/O W216
P/O A1A1A2 AUDIO JKFLD
P/O W225
P/O A3 SIGNAL ENTRY PANEL
EQPT
LINE
MON
AUDIO 1 OUT
AUDIO 2 OUT
AUDIO 3 OUT
AUDIO 4 OUT
AUDIO 5 OUT
AUDIO 6 OUT
AUDIO 7 OUT
AUDIO 8 OUT
P/O A1A2A1 1290 FSK MODEM
DIVERSITY INPUT
DIVERSITY OUTPUT
P/O W22
P/O A1A1A2 AUDIO JKFLD

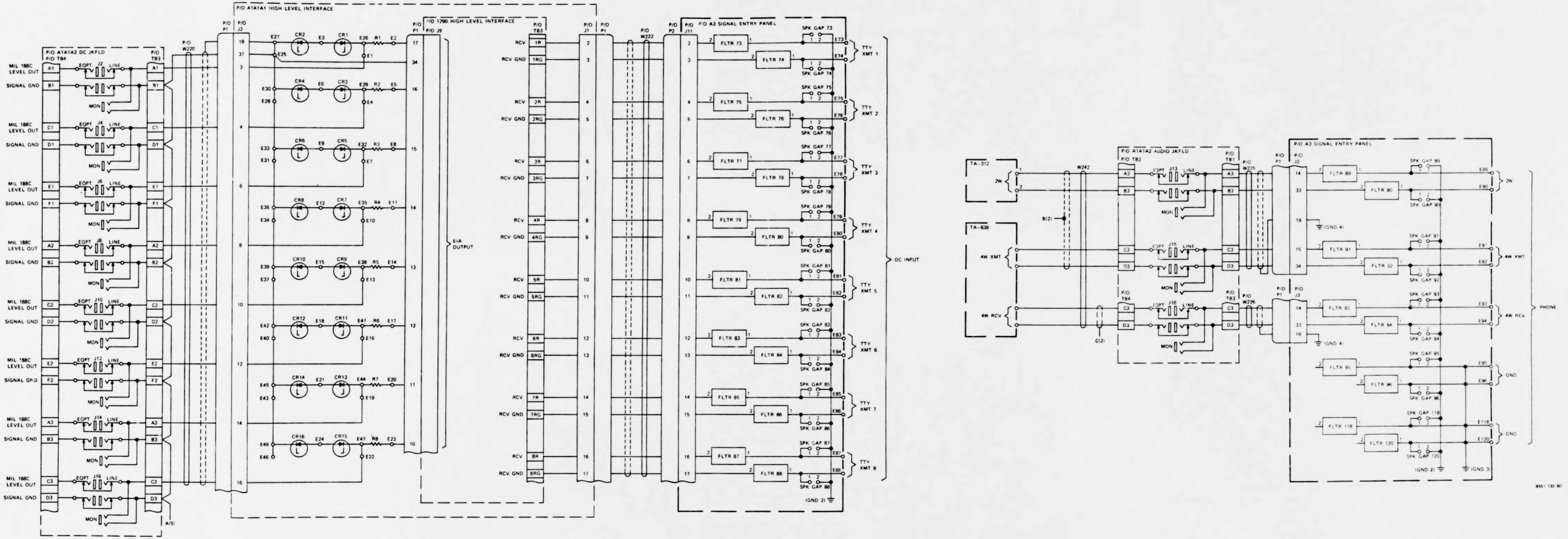
FO-3. AN/TSC-60(V)7 Tty Subsystem Wiring Diagram
(Sheet 1 of 5)


A1A1A7 SECURE PATCH PANEL
METER INPUT
J12
M1
SECURE BYPASS PLUG
J3
J1
P2
E1
J2
P1
EQPT
J11
LINE
J10
MON
J9
J8
J7
J6
(E1)
(E2)
W201
W203
A2A4 TSEC/KWX-11
TB4
SEND
RCV
TD STEP
SHIELD
LINE OUT
GND
LINE IN
W208
W209
W202
J4
J5
A2A2 TSEC/KW-7
W204
LOOP IN
W206
W210
A2A3 TSEC/KW-7
W205
LOOP OUT
W207
SPARE
W200
A1A2A3 AN/UGC-74
TTY TERMINAL
RCV
RCV RTN
SEND
SEND RTN
P/O A1A2A1 1290
FSK MODEM
P/O J38
P/O P1
P/O W221
DIVERSITY INPUT
DIVERSITY OUTPUT
SHIELD (GND)
P/O A1A1A2 AUDIO JKFLD
P/O TB2
P/O TB1
P/O TB4
P/O TB3
J45
J47
J46
J48
P/O A1A1A3 DC JKFLD
J18
J19
W211
W212
A1A3A1 MPC-1000T
LCO FSK MODEM
POLAR IN
AFSK OUT
MIL OUTPUT
AUDIO IN
W213
W214
P/O W226
P/O W225
P/O A3 SIGNAL ENTRY PANEL
FLTR 41
FLTR 42
FLTR 65
FLTR 66
SPK GAP 41
SPK GAP 42
SPK GAP 65
SPK GAP 66
TTY KEYER (AUDIO OUTPUT)
TTY CONVERTER (AUDIO INPUT)

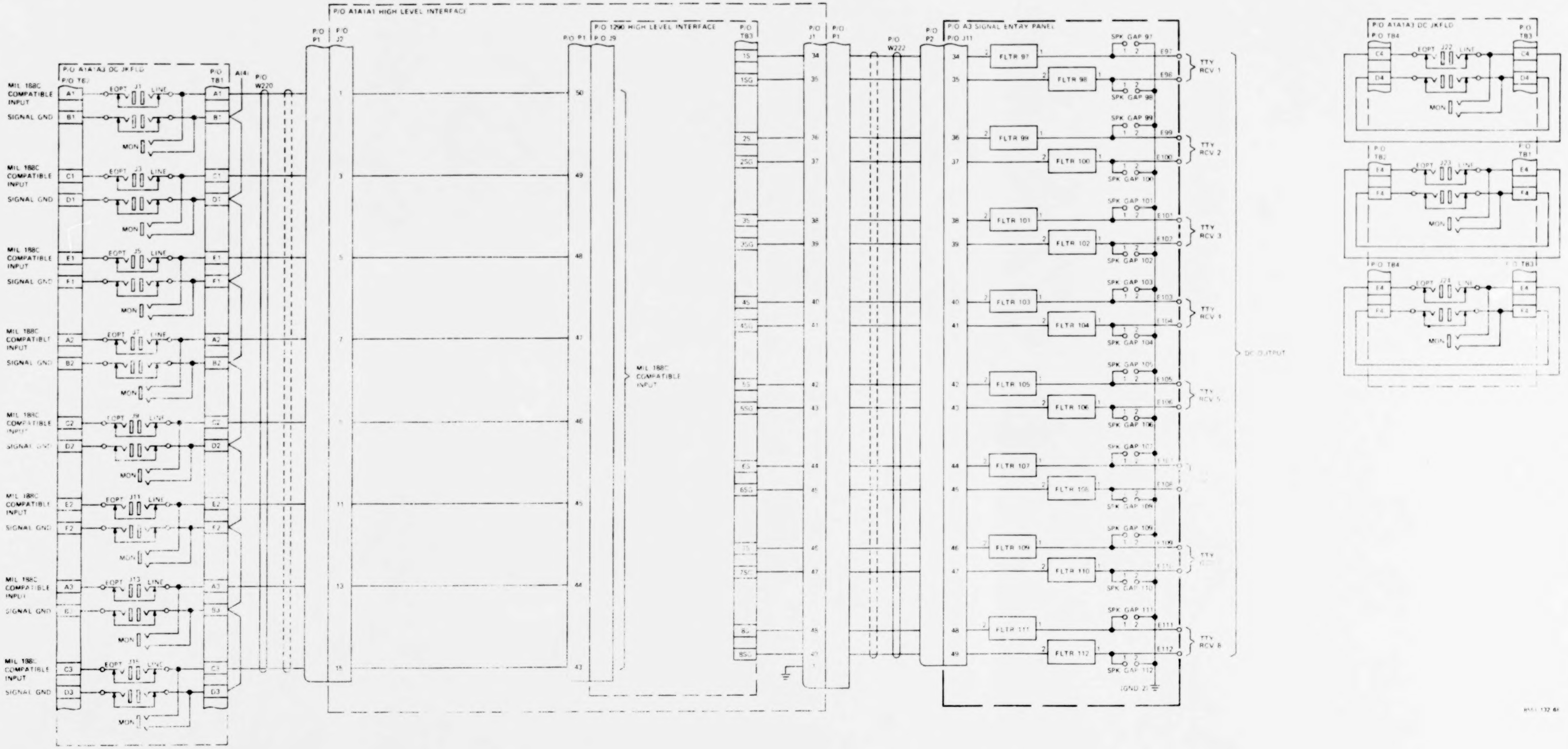
FO-3. AN/TSC-60(V)7 Tty Subsystem Wiring Diagram
(Sheet 2 of 5)


P/O A1A1A2 AUDIO JKFLD
P/O TB2
P/O TB1
COMPOSITE 1 OUT
COMPOSITE 2 OUT
EQPT
LINE
MON
P/O W273
P/O A1A2A1 1290 FSK MODEM
DATA (EIA)
SIGNAL GND
SHIELD (GND)
P/O W219
P/O A1A1A3 DC JKFLD
P/O TB4
P/O TB3
P/O W217
P/O W218
P/O A1A1A5 KEYER/CONVERTER SHELF
P/O A1A1A6 KEYER/CONVERTER SHELF
TC-301F CONV
P/O W215
P/O W216
P/O A1A1A2 AUDIO JKFLD
P/O W226
P/O A3 SIGNAL ENTRY PANEL
FLTR 49
FLTR 50
SPK GAP 49
SPK GAP 50
AUDIO 1 IN
AUDIO 2 IN
AUDIO 3 IN
AUDIO 4 IN
AUDIO 5 IN
AUDIO 6 IN
AUDIO 7 IN
AUDIO 8 IN
B551 132 6C

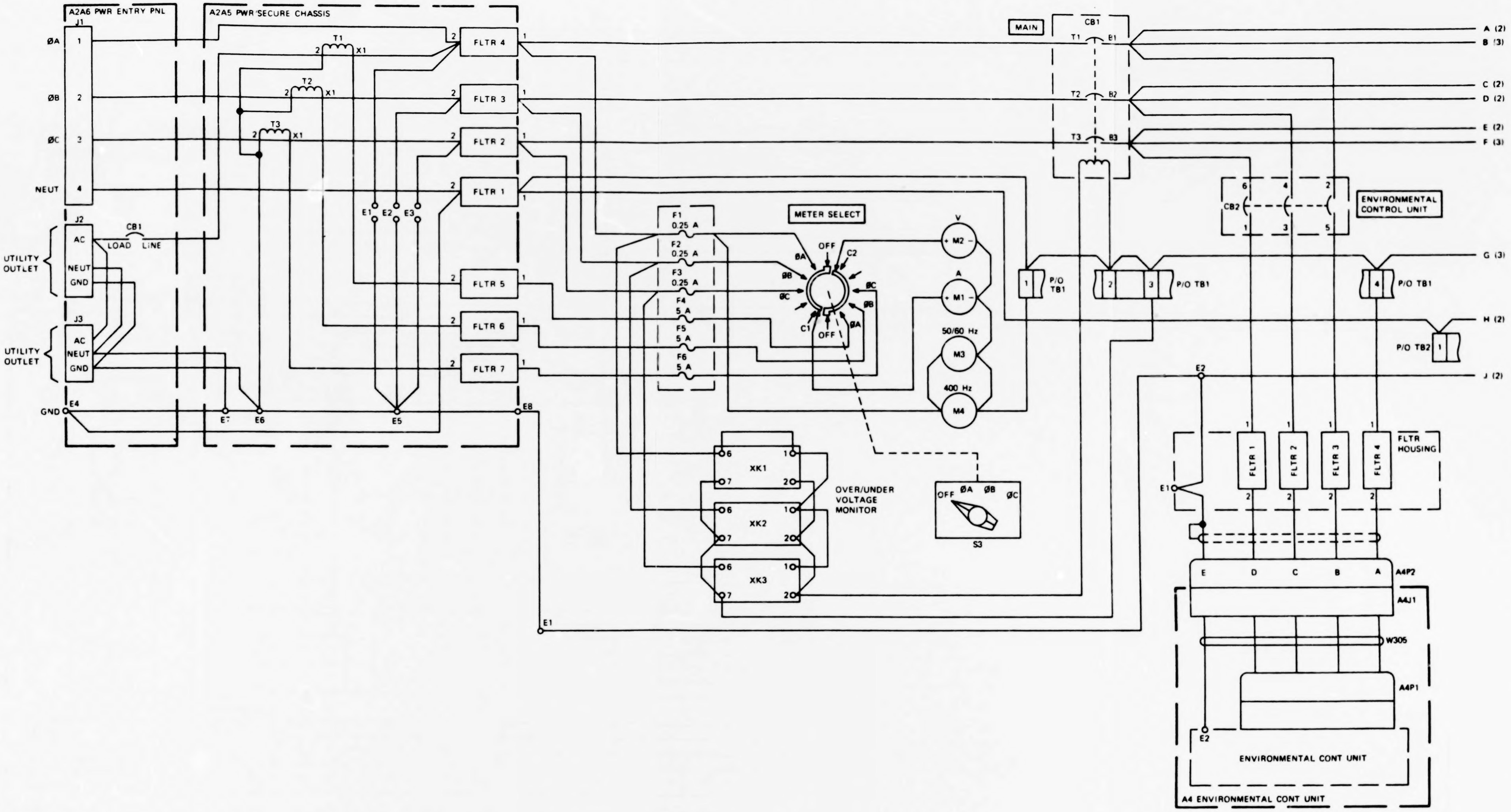
FO-3. AN/TSC-60(V)7 Tty Subsystem Wiring Diagram
(Sheet 3 of 5)


P/O A1A1A3 DC JKFLD
P/O TB4
MIL 188C LEVEL OUT
SIGNAL GND
EQPT
LINE
MON
P/O W220
P/O TB3
A15
P/O A1A1A1 HIGH LEVEL INTERFACE
P/O P1
P/O J2
P/O 1290 HIGH LEVEL INTERFACE
P/O J9
EIA OUTPUT
RCV
RCV GND
P/O TB3
P/O J1
P/O W222
P/O P2
P/O J11
P/O A3 SIGNAL ENTRY PANEL
FLTR 73
FLTR 74
SPK GAP 73
SPK GAP 74
TTY XMT 1
TTY XMT 2
TTY XMT 3
TTY XMT 4
TTY XMT 5
TTY XMT 6
TTY XMT 7
TTY XMT 8
DC INPUT
(GND 2)
TA-312
2W
TA-838
4W XMT
4W RCV
W242
B(2)
C(2)
P/O A1A1A2 AUDIO JKFLD
P/O TB2
P/O TB1
P/O W225
P/O W226
P/O J3
(GND 4)
(GND 3)
PHONE
GND
855-132 60

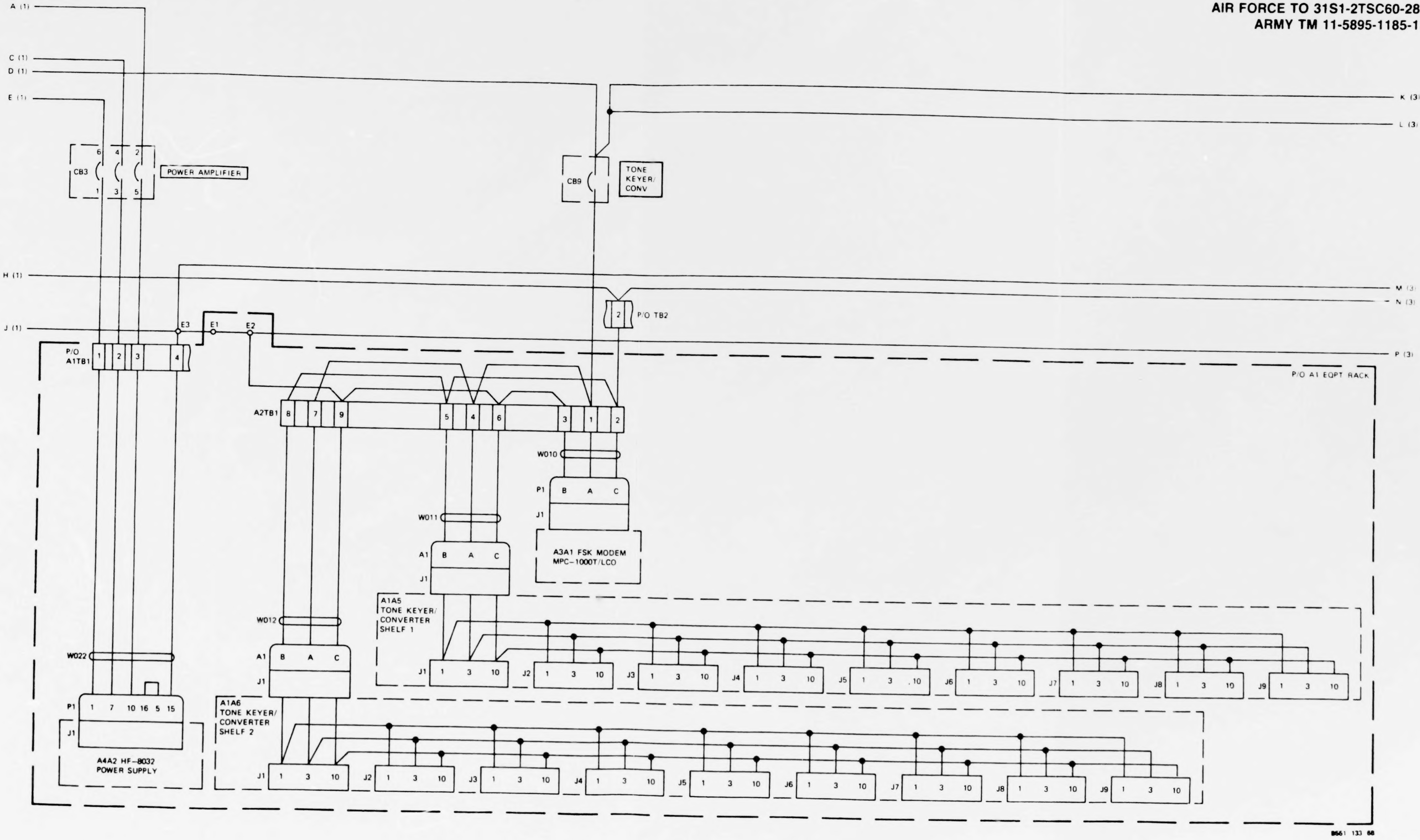
FO-3. AN/TSC-60(V)7 Tty Subsystem Wiring Diagram
(Sheet 4 of 5)


P/O A1A1A1 HIGH LEVEL INTERFACE
P/O 1290 HIGH LEVEL INTERFACE
P/O A3 SIGNAL ENTRY PANEL
P/O A1A1A3 DC JKFLD
P/O TB3
P/O TB1
P/O W220
P/O W222
P/O P1
P/O J7
P/O J9
P/O J1
P/O P2
P/O J11
MIL 188C COMPATIBLE INPUT
SIGNAL GND
EQPT
LINE
MON
FLTR 97
FLTR 98
FLTR 99
FLTR 100
FLTR 101
FLTR 102
FLTR 103
FLTR 104
FLTR 105
FLTR 106
FLTR 107
FLTR 108
FLTR 109
FLTR 110
FLTR 111
FLTR 112
SPK GAP 97
SPK GAP 98
TTY RCV 1
TTY RCV 2
TTY RCV 3
TTY RCV 6
DC OUTPUT
GND 27

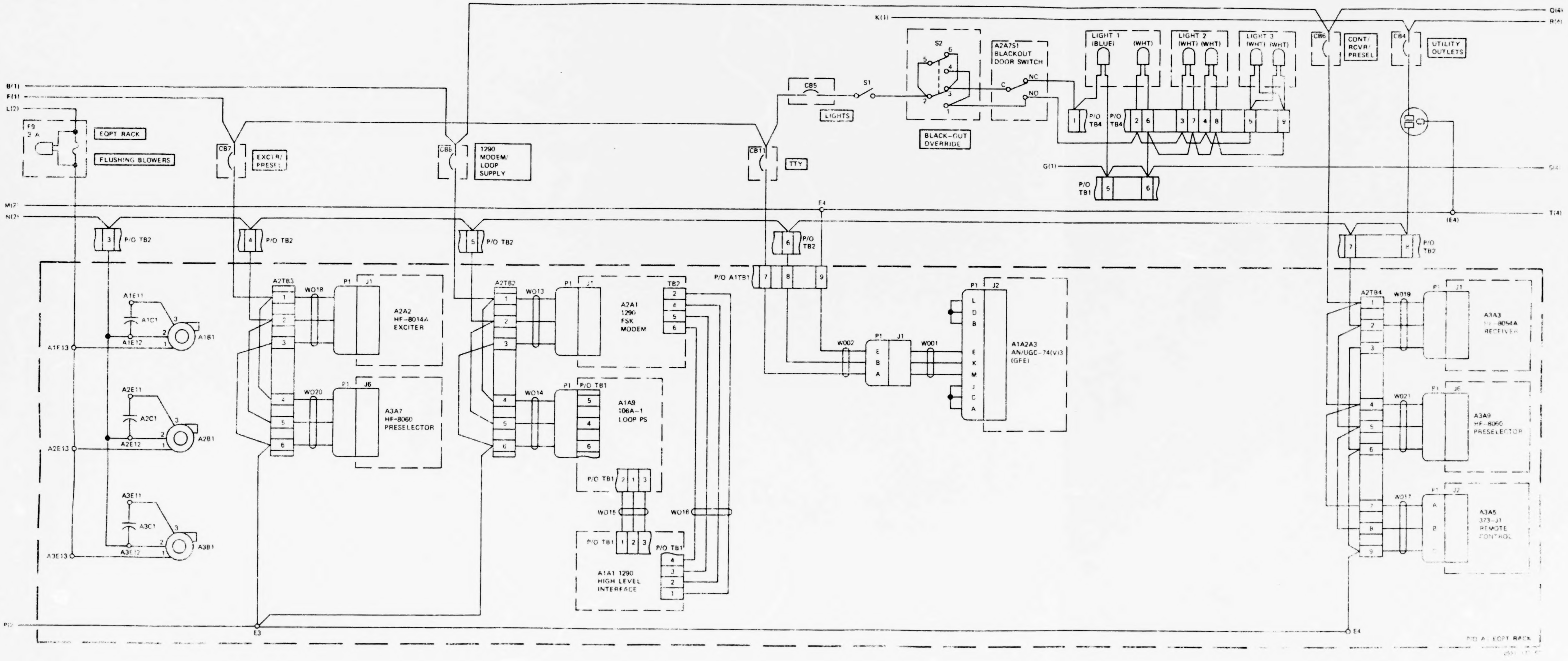
FO-3. AN/TSC-60(V)7 Tty Subsystem Wiring Diagram
(Sheet 5 of 5)


A2A6 PWR ENTRY PNL
J1
ØA
ØB
ØC
NEUT
1
2
3
4
J2
AC
NEUT
GND
CB1
LOAD
LINE
UTILITY OUTLET
J3
AC
NEUT
GND
UTILITY OUTLET
GND
E4
A2A5 PWR SECURE CHASSIS
T1
T2
T3
X1
FLTR 4
FLTR 3
FLTR 2
FLTR 1
FLTR 5
FLTR 6
FLTR 7
E1
E2
E3
E5
E6
E7
E8
F1 0.25 A
F2 0.25 A
F3 0.25 A
F4 5 A
F5 5 A
F6 5 A
METER SELECT
OFF
C2
ØA
ØB
ØC
C1
OFF
V
M2
A
M1
50/60 Hz
M3
400 Hz
M4
XK1
XK2
XK3
OVER/UNDER VOLTAGE MONITOR
OFF ØA ØB ØC
S3
MAIN
CB1
T1
B1
T2
B2
T3
B3
CB2
ENVIRONMENTAL CONTROL UNIT
P/O TB1
P/O TB2
A (2)
B (3)
C (2)
D (2)
E (2)
F (3)
G (3)
H (2)
J (2)
FLTR HOUSING
FLTR 1
FLTR 2
FLTR 3
FLTR 4
E1
E2
E
D
C
B
A
A4P2
A4J1
W305
A4P1
ENVIRONMENTAL CONT UNIT
A4 ENVIRONMENTAL CONT UNIT
8561 133 6A

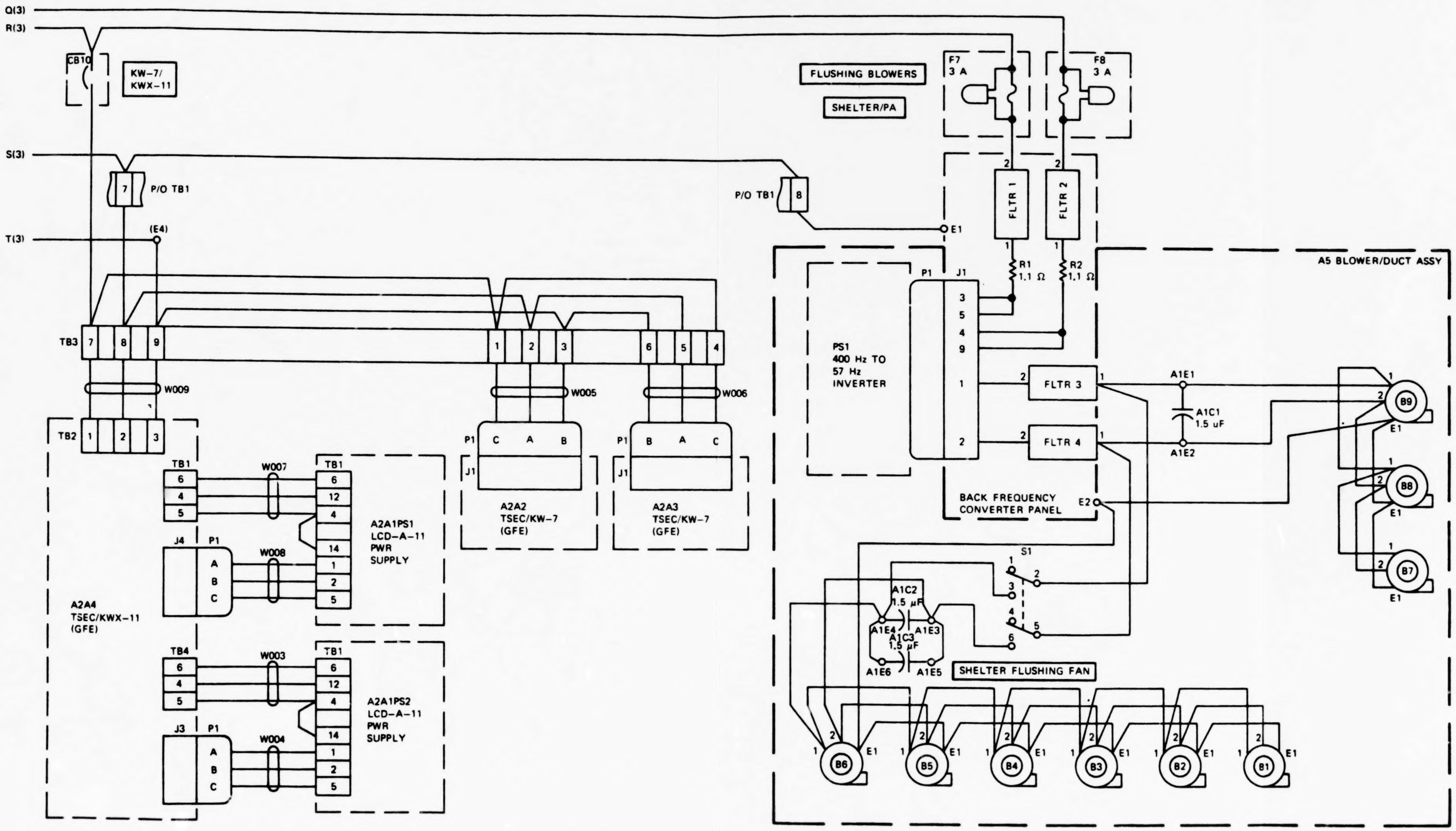
FO-4. AN/TSC-60(V)7 Power Subsystem Wiring Diagram
(Sheet 1 of 4)


A (1)
C (1)
D (1)
E (1)
K (3)
L (3)
CB3
6
4
2
1
3
5
POWER AMPLIFIER
CB9
TONE KEYER/ CONV
H (1)
M (3)
N (3)
2
P/O TB2
J (1)
E3
E1
E2
P (3)
P/O A1TB1
1
2
3
4
P/O A1 EQPT RACK
A2TB1
8
7
9
5
4
6
3
1
2
W010
P1
B
A
C
J1
A3A1 FSK MODEM MPC-1000T/LCO
W011
A1
B
A
C
J1
A1A5 TONE KEYER/ CONVERTER SHELF 1
W012
A1
B
A
C
J1
W022
P1
1
7
10
16
5
15
J1
A4A2 HF-8032 POWER SUPPLY
A1A6 TONE KEYER/ CONVERTER SHELF 2
J1
J2
J3
J4
J5
J6
J7
J8
J9
1
3
10
8661 133 88

FO-4. AN/TSC-60(V)7 Power Subsystem Wiring Diagram (Sheet 2 of 4)


B(1)
F(1)
L(2)
F9
3 A
EQPT RACK
FLUSHING BLOWERS
CB7
EXCTR/
PRESEL
CB8
1290
MODEM/
LOOP
SUPPLY
CB5
LIGHTS
CB11
TTY
K(1)
S1
S2
A2A7S1
BLACKOUT
DOOR SWITCH
NC
NO
C
BLACK-OUT
OVERRIDE
LIGHT 1
(BLUE)
(WHT)
LIGHT 2
(WHT) (WHT)
LIGHT 3
(WHT) (WHT)
P/O
TB4
P/O
TB4
G(1)
P/O
TB1
CB6
CONT/
RCVR/
PRESEL
CB4
UTILITY
OUTLETS
Q(4)
R(4)
S(4)
T(4)
(E4)
M(2)
N(2)
E4
P/O TB2
P/O A1TB1
A1E11
A1C1
A1E12
A1B1
A1E13
A2E11
A2C1
A2E12
A2B1
A2E13
A3E11
A3C1
A3E12
A3B1
A3E13
A2TB3
WO18
P1
J1
A2A2
HF-8014A
EXCITER
WO20
J6
A3A7
HF-8060
PRESELECTOR
A2TB2
WO13
A2A1
1290
FSK
MODEM
TB2
WO14
P/O TB1
A1A9
106A-1
LOOP PS
WO15
WO16
A1A1 1290
HIGH LEVEL
INTERFACE
W002
W001
J2
A1A2A3
AN/UGC-74(V)3
(GFE)
A2TB4
W019
A3A3
HF-8054A
RECEIVER
W021
A3A9
HF-8060
PRESELECTOR
W017
A3A5
373-J1
REMOTE
CONTROL
P(2)
E3
P/O A1 EQPT RACK

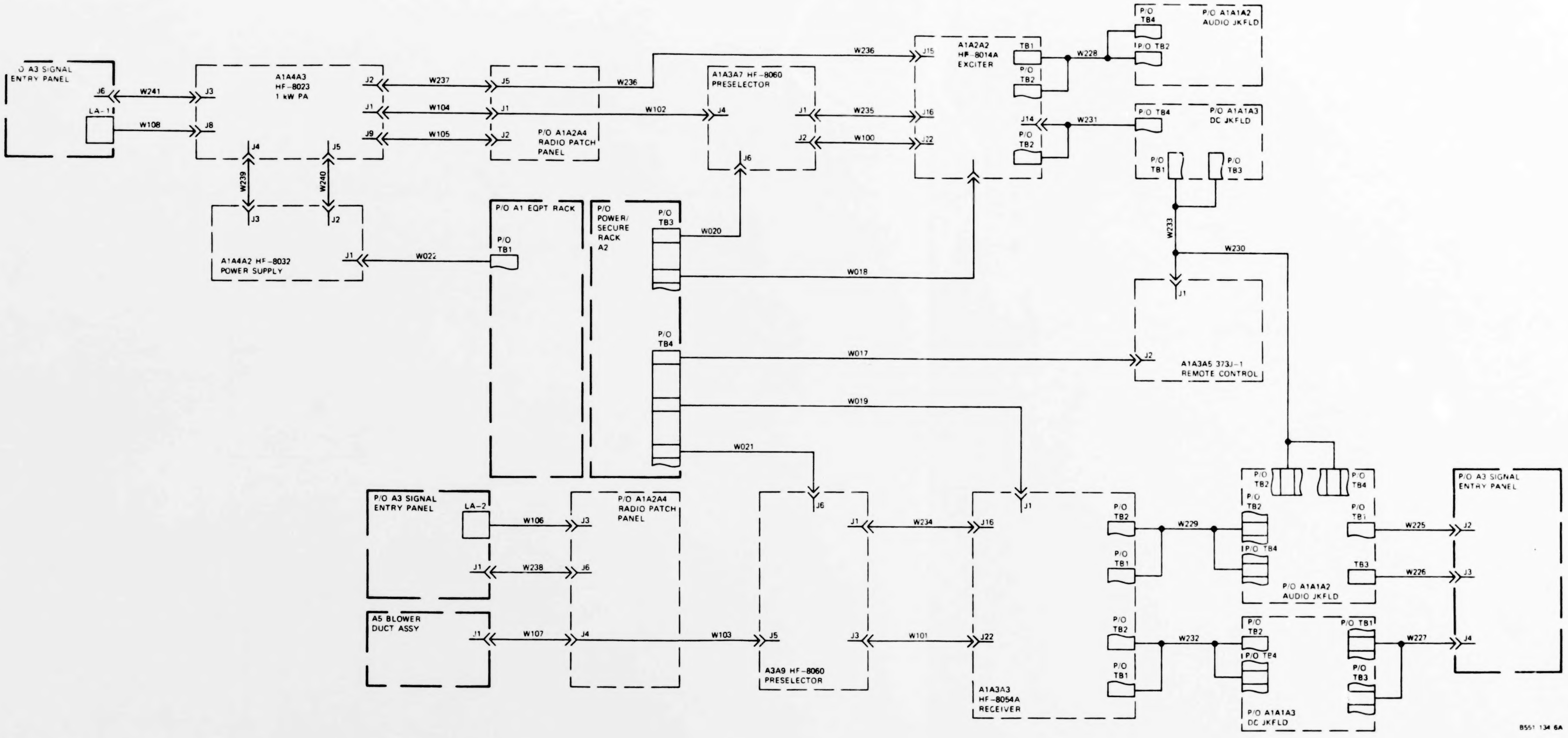
FO-4. AN/TSC-60(V)7 Power Subsystem Wiring Diagram
(Sheet 3 of 4)


Q(3)
R(3)
S(3)
T(3)
CB10
KW-7/
KWX-11
P/O TB1
(E4)
TB3
W009
TB2
A2A4
TSEC/KWX-11
(GFE)
TB1
W007
J4
P1
W008
A
B
C
A2A1PS1
LCD-A-11
PWR
SUPPLY
TB4
W003
J3
W004
A2A1PS2
LCD-A-11
PWR
SUPPLY
W005
W006
A2A2
TSEC/KW-7
(GFE)
A2A3
TSEC/KW-7
(GFE)
J1
FLUSHING BLOWERS
SHELTER/PA
F7
3 A
F8
3 A
FLTR 1
FLTR 2
E1
R1
1.1 Ω
R2
1.1 Ω
PS1
400 Hz TO
57 Hz
INVERTER
FLTR 3
FLTR 4
BACK FREQUENCY
CONVERTER PANEL
E2
A5 BLOWER/DUCT ASSY
A1E1
A1C1
1.5 uF
A1E2
B9
B8
B7
S1
A1C2
1.5 µF
A1E4
A1E3
A1C3
1.5 µF
A1E6
A1E5
SHELTER FLUSHING FAN
B6
B5
B4
B3
B2
B1

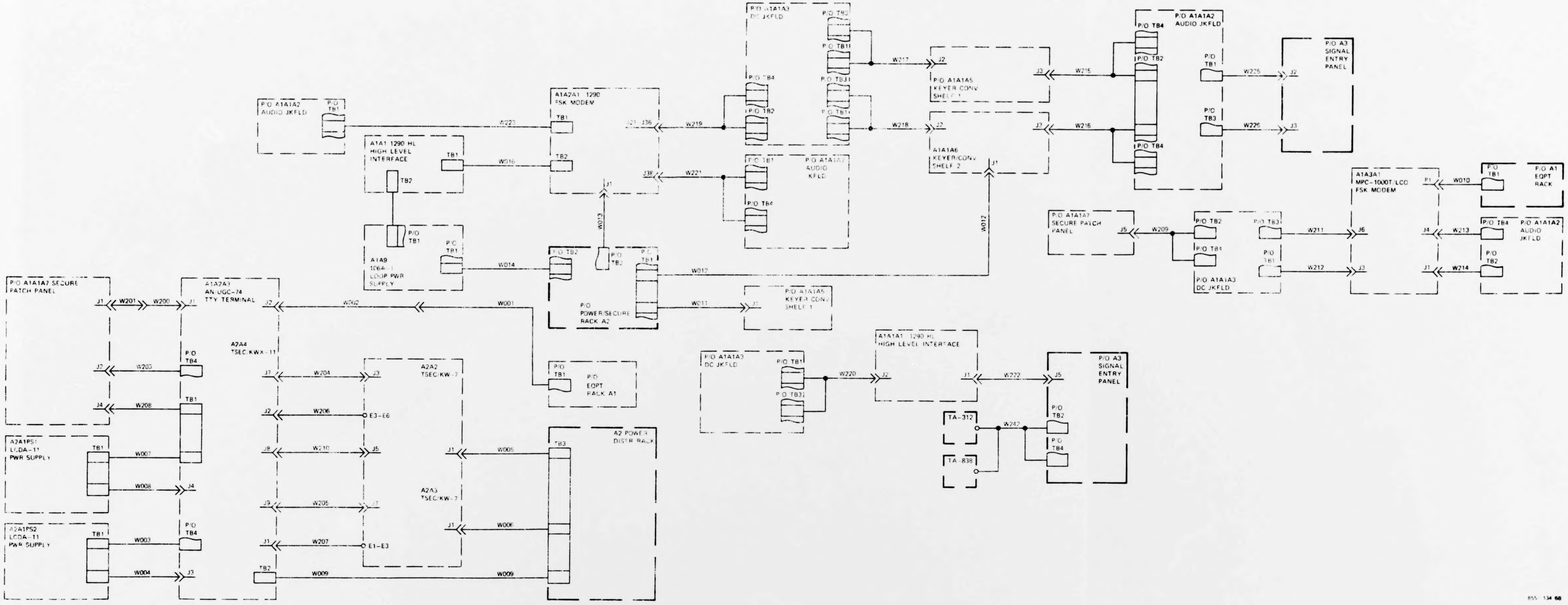
NOTES:
1. UNLESS OTHERWISE SPECIFIED:
ALL CAPACITANCE VALUES ARE 0.27 µF
2. ALL POWER WIRING AND COMPONENTS NOT ENCLOSED IN DASHED BOXES AND IDENTIFIED, ARE PART OF POWER DISTRIBUTION A2A1.
EXAMPLE–POWER/SECURE CHASSIS A2A5 CONSISTS OF A2A6 (OUTSIDE COMPONENTS) AND A2A5 (INSIDE COMPONENTS)

8551 133 80

FO-4. AN/TSC-60(V)7 Power Subsystem Wiring Diagram
(Sheet 4 of 4)


O A3 SIGNAL ENTRY PANEL
J6
LA-1
W241
W108
A1A4A3 HF-8023 1 kW PA
J3
J8
J2
J1
J9
J4
J5
W237
W104
W105
W239
W240
A1A4A2 HF-8032 POWER SUPPLY
J3
J2
J1
W022
J5
J1
J2
P/O A1A2A4 RADIO PATCH PANEL
W236
W102
P/O A1 EQPT RACK
P/O TB1
P/O POWER/ SECURE RACK A2
P/O TB3
P/O TB4
W020
W018
W017
W019
W021
A1A3A7 HF-8060 PRESELECTOR
J4
J1
J2
J6
W235
W100
A1A2A2 HF-8014A EXCITER
J15
J16
J22
J14
TB1
P/O TB2
P/O TB2
W228
W231
P/O TB4
P/O TB2
P/O A1A1A2 AUDIO JKFLD
P/O TB4
P/O A1A1A3 DC JKFLD
P/O TB1
P/O TB3
W233
W230
J1
J2
A1A3A5 373J-1 REMOTE CONTROL
P/O A3 SIGNAL ENTRY PANEL
LA-2
W106
J1
W238
J3
J6
A5 BLOWER DUCT ASSY
J1
W107
J4
P/O A1A2A4 RADIO PATCH PANEL
W103
J5
J6
J1
J3
A3A9 HF-8060 PRESELECTOR
W234
W101
J1
J16
J22
A1A3A3 HF-8054A RECEIVER
P/O TB2
P/O TB1
P/O TB2
P/O TB1
W229
W232
P/O TB2
P/O TB4
P/O TB2
P/O TB4
P/O TB1
TB3
P/O A1A1A2 AUDIO JKFLD
P/O TB2
P/O TB4
P/O TB1
P/O TB3
P/O A1A1A3 DC JKFLD
W225
W226
W227
P/O A3 SIGNAL ENTRY PANEL
J2
J3
J4
B551 134 6A

FO-5. AN/TSC-60(V)7 Cabling Diagram (Sheet 1 of 2)


P/O A1A1A2 AUDIO JKFLD
P/O TB1
W223
A1A1 1290 HL HIGH LEVEL INTERFACE
TB1
TB2
W016
A1A2A1 1290 FSK MODEM
TB1
TB2
J21 J36
J38
J1
W013
A1A9 106A-1 LOOP PWR SUPPLY
P/O TB1
P/O TB1
W014
P/O TB2
P/O TB2
P/O TB1
P/O POWER/SECURE RACK A2
P/O A1A1A7 SECURE PATCH PANEL
J1
W201
W200
J1
A1A2A3 AN/UGC-74 TTY TERMINAL
J2
W002
W001
A2A4 TSEC/KWX-11
J2
W203
P/O TB4
J4
W208
TB1
J7
W204
J3
J2
W206
E3-E6
J8
W210
J5
J3
W205
J7
J1
W207
E1-E3
A2A2 TSEC/KW-7
A2A3 TSEC/KW-7
J1
W005
J1
W006
P/O TB1
P/O EQPT RACK A1
A2 POWER DISTR RACK
TB3
A2A1PS1 LCDA-11 PWR SUPPLY
TB1
W007
W008
J4
A2A1PS2 LCDA-11 PWR SUPPLY
TB1
W003
P/O TB4
W004
J3
TB2
W009
W009
P/O A1A1A3 DC JKFLD
P/O TB3
P/O TB11
P/O TB4
P/O TB31
P/O TB2
P/O TB1
W219
W217
W218
P/O TB1
P/O A1A1A2 AUDIO KFLD
P/O TB4
W221
W012
W011
J2
P/O A1A1A5 KEYER CONV SHELF 1
J3
J2
A1A1A6 KEYER/CONV SHELF 2
J3
J1
W215
W216
P/O A1A1A2 AUDIO JKFLD
P/O TB4
P/O TB2
P/O TB4
P/O TB1
P/O TB3
W225
W226
J2
J3
P/O A3 SIGNAL ENTRY PANEL
J1
P/O A1A1A5 KEYER CONV SHELF 1
P/O A1A1A7 SECURE PATCH PANEL
J5
W209
P/O TB2
P/O TB4
P/O TB3
P/O TB1
P/O A1A1A3 DC JKFLD
W211
W212
A1A3A1 MPC-1000T/LCO FSK MODEM
J6
J3
P1
W010
J4
W213
J1
W214
P/O TB1
P/O A1 EQPT RACK
P/O TB4
P/O A1A1A2 AUDIO JKFLD
P/O TB2
P/O A1A1A3 DC JKFLD
P/O TB1
P/O TB3
W220
J2
A1A1A1 1290 HL HIGH LEVEL INTERFACE
J1
W222
J5
P/O A3 SIGNAL ENTRY PANEL
TA-312
TA-838
W242
P/O TB2
P/O TB4
855 134 68

FO-5. AN/TSC-60(V)7 Cabling Diagram (Sheet 2 of 2)